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EDITORIAL COMMENTS

Last month we mailed the issues four days earlier than what our schedule shows and still many did not receive their issues for three weeks. We don't have an answer to this except to switch to first class mail. To do this send .75 cents times your remaining issues. This may be the only way to speed your issue thru the mail system, which by the way is adding 30% to our bulk mail postage cost starting in February 1991.

Many late hours have gone into this issue, by us and the many authors who have contributed their articles. We think that the effort is worth it, to bring you all the new programs for your TRS-80 enjoyment.

Also, many new items have been added to our inventory to serve you, such as 3-1/4 disks, disk cleaning kits. A-B switches for the RS232 port, along with modem cables with male to female or male to male connectors. Four inch by 1-7/16 labels have been added for your convenience in using the new PostMaster program. Printer dust covers and a whole new batch of disk volumes to the File Cabinet Library have been added, plus a new book to the Chris Fara collection.

We also enjoyed a visit from John G. Clark and wife from Wayne City, Illinois, who stopped in on their way thru Wyoming to Yellowstone and Salt Lake City. We hope you enjoyed your trip and had a safe return.



NEWS ITEMS
=====

NEW TRS-80 SPEED-UP KIT
Doubles Your Processing Speed
by Peter Ray (Anitek)

Are you tired of waiting for your computer to finish running your programs? Would you like your programs to finish running in less than half the time as before? If so, keep reading. Anitek Software Products has just broken the 2X speed barrier with their new 6.7 MHz CPU Speed-Up kit for the non-gate-array TRS-80 4's and 4P's. This amazing new speed-up kit will actually enable your computer to run at over twice the processing through-put speed of its original so-called "4 MHz" speed (the fastest that your computer was able to run without a speed-up kit). The chart below shows the bench-test results that prove this.

The new 6.7 MHz Speed-Up kit is a breeze to install. The kit consists of just three chips that easily replace three socketed chips on your mother board: the CPU chip, the clock generator chip, and the data bus buffer chip. There is no cutting, soldering or modifying the mother board required to install the kit in standard, 6.7 MHz, configuration. Just plug in the three chips and begin processing at lightning fast speeds.

For computers with slower RAM chips and/or other board components, this new Speed-Up also allows the user the option of running at 6.1 MHz or at 5.1 MHz by just connecting one jumper wire to the clock generator chip.

To verify the dramatic increase in processing through-put speed of the new 6.7 MHz Speed-Up kit, we ran a memory test program that read and verified 4480K of memory on a non-gate-array Model 4 at various speed configurations and then compared the results. The first entry in the chart below is the results with the new 6.7 MHz Speed-Up kit installed. The next two entries are the results of the same kit jumpered for 6.1 MHz and 5.1 MHz, respectively. The last two entries are the results of the computer running in its original "fast" and "slow" speeds, without the Speed-Up kit installed. The first column

is the running time of each test, in seconds. The second column is the relative processing speed as compared to the normal "4 MHz" speed of the computer. As shown by the chart, Anitek's new 6.7 MHz Speed-Up kit gave the computer over twice the processing speed (202%) as it had at its fastest speed without a speed-up kit.

	running time (sec)	bench mark
6.7 Mhz	55	202 %
6.1 Mhz	61	182 %
5.1 Mhz	70	159 %
4.0 Mhz	111	100 %
2.0 Mhz	176	63 %

As you can see by the above chart, the test took less than 1/2 the amount of time to complete with the new 6.7 MHz Speed-Up kit installed than it did at the fastest speed possible without a speed-up kit. What this means to you is that you don't have to wait so long for your programs to run any more. For example, if you have a very long document that takes 2 minutes to spell-check, it will now take only 1 minute. If you have a spread sheet that takes 60 seconds to calculate, it will now take only 30 seconds. In fact any program you run that takes some measurable amount of time to complete some internal processing, will now take half the amount of time as before. This means hours of your valuable time saved every week. This means real dollars and cents back in your pocket.

The no-worry, no-hassle, 100% customer satisfaction, money-back guarantee: Try the new 6.7 MHz Speed-Up kit in your computer for 30 days. If you don't see real processing speed increases of up to twice what you were seeing before, or if for any reason you decide to change your mind, just return the kit within 30 days in the same condition you received it, and your money will be quickly and cheerfully refunded, even the shipping charge, no questions asked. The 6.7 MHz Speed-Up kit also comes with free technical support and is covered by a 90-day fix or replace warrantee.

Your ticket to the fast lane in computer processing is only a phone call away. For more information, or to order your new 6.7 MHz Speed-Up kit, call Anitek Software Products at 1-407-259-9397. The new 6.7

MHZ Speed-Up kit is only \$45. VISA and MasterCard orders taken over the phone. Or write us at PO Box 361136, Melbourne FL 32936. Please include \$4 for shipping and handling per kit. Florida residents add 6% tax. The 6.7 MHZ kit works with computer models 26-1067, 26-1068, 26-1069 and 26-1080. CPU speed-up kits do not decrease the access time of mechanical devices such as printers, floppy drives and hard drives.

In addition to the new 6.7 MHZ kit, Anitek Software Products is also offering two other speed-up options for your TRS-80: the 6.3 MHZ speed-up kit for the gate-array model 4's and 4P's and the 5.1 MHZ speed-up kit for the non-gate-array Model 4's and 4P's. These two kits are both only \$35 each, and come with a 30-day money-back guarantee, a 90-day warrantee, and free technical support.
-Peter Ray (Anitek)

HYPERSVC GIVES MANY PROGRAMS ACCESS TO HYPERMEM AND SUPERMEM by Peter Ray (Anitek)

There is a new program from Anitek Software Products, called "HyperSVC", that modifies LS-DOS or TRSDOS 6 so that any program that accesses expanded memory through the DOS's bank switching supervisory calls can now access both HyperMem and SuperMem memory. According to one authority, some of the popular application programs that do access expanded memory through the DOS this way, and as such would now be able to access HyperMem and SuperMem memory with the aid of "HyperSVC", are: PRO-WAM, The New Double Duty, Little Brother Data Base, Busy-Calc and Busy-Calc Extra spread-sheet, Fast Term communication program, M-RAS Assembler, M-C Compiler, and PRO-ENH BASIC Compiler, and with more programs being written all the time. What this means to you is that if you have HyperMem or SuperMem memory in your computer you are no longer limited to just LeScript and HyperDrive as the programs that will work with it. "HyperSVC" opens the door to a vast new world of TRS-80 power for you.

"HyperSVC" is like a patch to the DOS, only smarter and better than a patch. "HyperSVC" is what they call an "intelligent patch". This means that before "HyperSVC" modifies the DOS, it first checks to see whether or not your computer actually has HyperMem memory or SuperMem memory in it, and if so, it checks how much memory is there. Then "HyperSVC" modifies the DOS in memory according to the type and the amount of expansion memory that you have (up to a maximum of 7 32K-banks, the limit set by the DOS). If you don't have HyperMem or SuperMem memory in your computer, then "HyperSVC" exits without changing the DOS.

That is how "HyperSVC" is smarter than a standard DOS patch. How it is better than a patch is in the fact that you can take the same LS-DOS or TRSDOS 6 disk with "HyperSVC" on it and, without changing anything, you can use it one day on a computer with HyperMem expansion memory, the next day on a computer with SuperMem, the next day on a computer with a lot of expansion memory, the next day on a computer with a little expansion memory, and the next day on a computer with no expansion memory. All without changing anything with the DOS disk or with the application program that's accessing the expanded memory. That's an intelligent patch.

Another way that "HyperSVC" is smarter and better than a standard DOS patch is in the fact that the location of the patch area in the DOS can change from one version of the DOS to the next. This means that with a standard DOS patch you would need a different patch for each new version of the DOS that comes out. This is not so with "HyperSVC". This intelligent patch scans your DOS and finds the exact location of the patch area, and installs itself correctly every time. "HyperSVC" has been tested on almost every TRSDOS 6 and LS-DOS ever released, from version 6.3.1 all the way back to 6.0.1, and it installed itself correctly on each DOS, even though the patch locations were not all the same.

This is how it simple "HyperSVC" is to use: Copy HYPERSVC/CMD from the distribution disk to your LS-DOS or TRSDOS 6 disk. Then, at the DOS READY prompt, type: AUTO :0 HYPERSVC<enter>. That's it! Now

every time you boot up with that DOS disk, "HyperSVC" automatically configures the DOS so that it can access the HyperMem or SuperMem memory that is in the computer.

Concurrent with the release of "HyperSVC", Anitek is also releasing an updated version of "HyperDrive", the RAM disk driver software that works with both HyperMem and SuperMem memory expansions. "HyperDrive" version 1.04 now tests to see if the DOS is providing access to HyperMem or SuperMem, and if so it won't use any of the banks that the DOS says are already being used. This was a function that only became necessary to add to "HyperDrive" since "HyperSVC" came along to give the DOS the capability to directly access this extra memory.

"HyperSVC" and "HyperDrive" version 1.04 are sold together on the same disk for only \$19.95. Those who are registered HyperMem owners may return their old "HyperDrive" disk and purchase the new "HyperSVC"/"HyperDrive" disk for the reduced price of only \$10. For a limited time the new "HyperSVC"/"HyperDrive" disk is being offered at no charge with the purchase of any size HyperMem memory expansion kit.

The HyperMem memory expansion kit is still only \$64.95 with 0K of RAM. The 384K kit is only \$99.95. The 640K kit is only \$134.95. The 832K kit is only \$169.95. And the 1 megabyte kit is only \$199.95. HyperMem comes with a 30-day money-back guarantee, 90-day warrantee and free technical support. If for any reason you decide not to keep your HyperMem kit, return it within 30-days in the condition you received it, and the purchase price will be quickly and cheerfully refunded. Kit sizes are the total RAM when installed on a 128K TRS-80. HyperMem can be installed on 64K TRS-80.

For more information, or to order your new "HyperSVC"/"HyperDrive" disk or your HyperMem memory expansion kit, call Anitek Software Products at: 1-407-259-9397. VISA and MasterCard orders taken over the phone. Please include \$4 for shipping and handling. Florida residents add 6% tax. Prices guaranteed through October 31, 1990.
-Peter Ray (Anitek)

NEWDOS86 REVIEW

by Donald W. Ady

This will be the first of two installments describing a new DOS version called NewDos86. (Next month: BASIC enhancements). Written by Australian software author Warwick Sands, NewDos86 is now published and distributed by Computer News 80, with support by the author. NewDos86 provides a substantial set of new features. I'd recommend it highly, whether or not you are a NEWDOS 80 version 2 user.

The original NEWDOS80 distributor, APPARAT, released many versions such as NEWDOS, NEWDOS+, NEWDOS80 V1, NEWDOS80 V2, and then V2.5 with hard drive support. Soon thereafter, Apparat disconnected its phones and vanished. There is no M4 version. But, NewDos86 does support some M4 hardware features from M3 mode.

The author presumes that you own NEWDOS80 V2 and know it from its manual of some 290 odd pages. The NewDos86 manual of about 160 pages covers the enhancements. Freebie goodies that came with NEWDOS80 like EDTASM version or SUPERZAP/CMD are not part of NewDos86. They could be used from ND80V2 versions. NewDos86 has its own add on of utilities and document files.

If you can't get the Apparat manual, then what? NewDos86 has an excellent on the disk HELP system that could get pretty far in casual use of the DOS in a pinch. HELP starts from almost any running program by holding down SHIFT and 123 keys together. It is easy to follow at first sight.

NEW FEATURES:

SYSTEM options: 27 new ones added to 30 old ones. Many can install optional features. Typahead, for example. A program called PATCH/BAS leads you through painless prompts on most of the new ones, and also fixes certain utilities if present for NewDos86 changes. BASIC: 51 new keywords added to 127 old ones; ELE enhanced line editor. DOS has at least eight new commands plus many enhancements in ATTRIB, BOOT, CLEAR, DATE, COPY, DIR, FORMAT, FORMS, FREE, PDRIVE, and PURGE. There are a number of

separate new utilities like HELP and a RAM drive.

Memory use: Like NEWDOS80, NewDos86 reduces the RAM cost of add ons in part by disk overlays. However a configuration using most new features all at once did eat up nearly 4K in low RAM plus 4K in HIMEM vs ND80V2. HIMEM ones can all be temporarily cancelled by doing BOOT with SHIFT key depressed, getting HIMEM FFFFH.

DOS enhancements and additions

There is an optional editor for DOS commands. When you get an error message, the cursor comes on the incorrect command and can be changed. It works much like the old BASIC EDIT, but using the CLEAR key with EDIT keys like <D> DELETE. A shifted BREAK key aborts the command. The CLEAR key no longer clears the screen unless used with SHIFT. The DOS command SLEEP will blank the screen completely, but not lose its contents.

DIR is vastly revised. It sorts alphabetically. Slow on a first pass if the directory is excessively large, it goes fast the next time. A utility SORTDIR permanently sorts, and can be used on many types of foreign disks like LDOS etc. DIR has a number of new letter options. For instance the unique DIR K lists only KILLED files. UNKILL restores them if possible! DIR X or OLDIR gives the old type of unsorted listing. Almost two manual pages describe partspecs to get or omit selective listings.

A foremost new feature is ADFR: automatic format and density recognition. It can without any warning read many alien formats including LDOS and any kind of TRSDOS or LSDOS. It can by and large even use those formats as data disks. TRSDOS 1.3 is limited to only DIR and FREE and COPY usage. ND80V2 had been COPY only for TRSDOS 1.3 and no access at all to the others. ND80V2 and NewDos86 allow changing of many parameters in their own format. For ND80V2 this can be a trap as it can't read one not defined exactly right by change of PDRIVE table. NewDos86 makes this almost wholly automatic and convenient with PDRIVE rarely needed at all. A new LOGON command helps for problem cases to tell the system disks the number of sides to

ask for.

NEW DOS COMMANDS:

ATTRIB myfile,PSF=Y helps arrange a pseudo system file that can be set up to load as an overlay like system files can. Users may need the (separate) technical package sold for NewDos86; there is also a separate hard drive package. DAY prints date on screen. LOGON, tells the system about drive capacities. OLDIR gives DIR in the old style. SETSYS with SYSRES and RAM can set up a system RAM disk. FORMAT 4 then RAM 4 set up a 64K RAM disk for any purpose on an 128K machine. SLEEP saves and blanks the video. UNKILL restores a killed file. VID sets up 80X24 displays if on a Model 4. SORTDIR alphabetically sorts entries on the DIR/SYS itself for alphabetic listings.

I used the M3 version on M4D mainly, but also tried the M1 version. It came in 35T SSSD format. To create a 39T DSDD version, the following commands were used: PDRIVE 0 9=0,A then PDRIVE 0 9 TI=CK TD=G TC=39 SPT=36,A then COPY 0 0,,DPDN=9. That did a one drive copy using table entry 9 for DPDN, destination PDRIVE number. A second drive if present would have made it easier. M4D on which I have several DS drives has never made a usable M1 39T format. It has however duplicated M1 disks when skipping a FORMAT step that the M1 already had done. This also worked on NewDos86, going from 35T source to 39T with prior format under NewDos86 on M1. On the M4D I mounted the 35T source on :1 and a 39T with FORMAT already done by M1. A LOGON command was used with option to reset PDRIVE table specifics after successful disk IDs. COPY 0 1 and <N> for no new format then made a working M1 disk with 39T. There was an alarming tail end message of DIRECTORY ERROR, but it meant nothing.

-Don Ady

(Editors Note:) NewDos 86 is available from CN80 the price is \$70.00 US, which includes program disks and manual, add \$4.00 for shipping and handling in the US. Add \$6.00US for shipment to Canada. Add \$7.00US for shipments to other countries. Full support from the author via mail.

ASSEMBLY LANGUAGE TUTOR Part 20 by Christopher Fara (Microdex Corporation)

Move over a bit...

Eleven Z-80 instructions exist solely for the purpose of playing a sort of "musical chairs" with individual bits. To refresh memory and be prepared for today's subject, the reader may want to review "Bits and Bytes" in CN80 8/89:5 or Z80 Tutor I:19. The common idea in those instructions is to move all bits over by one position. In a move to the LEFT bit #0 (the rightmost bit) moves to the left, to position #1, which in turn moves to #2, and so on. At the end of the chain the leftmost bit #7 always "falls out" into the Carry flag. If that bit was "one" to begin with, then after the instruction the Carry flag is set C. If it was "zero" then C-flag is reset NC. The opposite happens in a move to the RIGHT. Bit #7 (the leftmost bit) replaces bit #6 which replaces #5, and so on, until the rightmost bit #0 falls out into the Carry flag. Instead of "musical chairs" we could also think of "domino effect" to visualize those "moves".

.....

RL	'byte'	Rotate Left
RLC	'byte'	Rotate Left Circular
RR	'byte'	Rotate Right
RRC	'byte'	Rotate Right Circular
SLA	'byte'	Shift Left Arithmetic
SRA	'byte'	Shift Right Arithmetic
SRL	'byte'	Shift Right Logical

The 'byte' can be any single register (except F) or a location in memory addressed by the register pair HL.

RL C
RR (HL)

.....

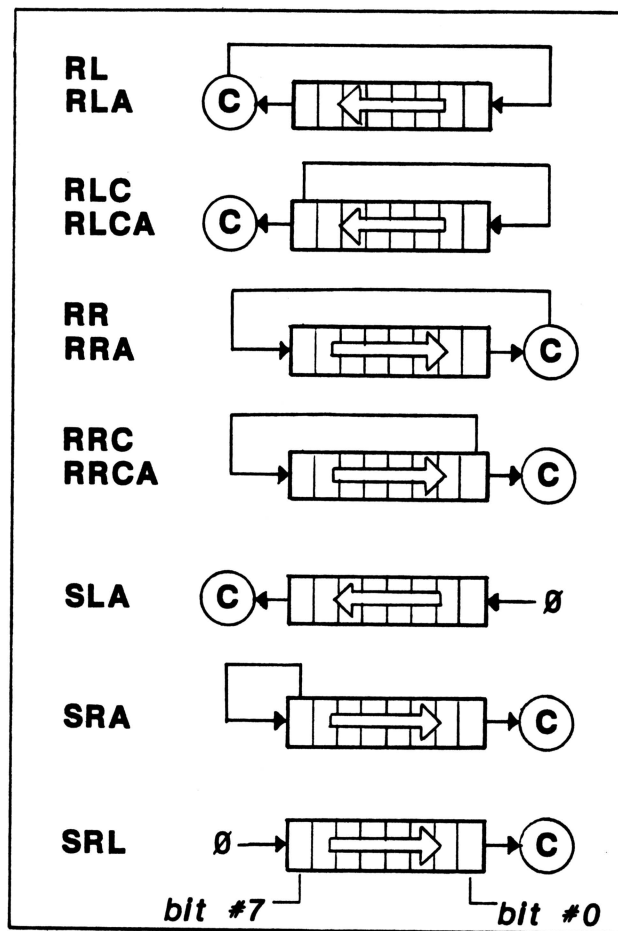
Each of the above instructions generates two bytes of code and sets or resets all four principal flags depending on the result (Sign, Zero, Parity, Carry). The "rotate" instructions have also special one-byte form for the register A (the "Accumulator"). These special cases affect only the Carry flag. The other three principal flags are not changed. Since the 'byte' is always register A, it is not spelled out in the operand field.

.....

RLA	Rotate Left Accumulator
RLCA	Rotate Left Circular Accum.
RRA	Rotate Right Accumulator
RRCA	Rotate Right Circular Accum.

.....

The differences between the instructions result from different ways the end bits are handled (leftmost #7 and rightmost #0). The best way to understand it is to look at a picture.



For example assume that the Carry flag is set C, and the bit pattern in a register looks like this

0001 1110

After RR the previous Carry moves into the leftmost position (ie. bit #7 will be set 1), while the rightmost bit 0 "falls out" into the C-flag which now will be reset NC. The bit pattern in the register will look like this

1000 1111

In a "circular" rotation RRC bit #0 also "falls out" into Carry, but at the same time moves "in a circle" to the leftmost position #7. The previous Carry does not replace bit #7 and is lost. The resulting bit pattern 00001111 is different than after RR. In SLA a "zero" moves into the rightmost bit, and in SRL a "zero" replaces the leftmost bit.

And in SRA the leftmost bit moves to the right as usual, but also "replaces itself" again (ie. SRA will never change the leftmost bit). And so on. Take a few bit patterns and see what each of those instructions would do to it, and what the Carry flag does before and after each operation.

Shifty calculations

No, we're not trying to cheat, but shifts are ideal for quick multiplications and divisions by powers of two (by 2, 4, 8 etc). Suppose, for example, that the register E has this bit pattern

0100 0001

which represents $64+1=65$. To multiply by 2 we can add E to itself. Since addition requires the use of register A we must write three instructions

LD A,E

ADD A,A

LD E,A

or we could simply write

SLA E

and the resulting bit pattern

1000 0010

now represents $128+2=130$. Since before the shift the leftmost bit was 0, Carry flag remains reset. But try SLA one more time

0000 0100 = 4 ???

and now the Carry flag is set, because the leftmost 1 "fell out" into it. The status of C-flag tells us that the multiplication overflowed the limit of a single byte and the result is wrong. But don't despair. Suppose the value of 130 is not in the single register E, but in the pair DE (which means that D is zero). The combined bit pattern is

0000 0000 1000 0010

Now to multiply 130 by 2 we would perform a pair of instructions

SLA E

RL D

Look at our picture to visualize what happens. SLA moves bit #7 from E to Carry, and RL forwards this Carry into bit #0 of register D. Thus both registers shift to the left in a "synchronized" way. There is no overflow because the offending Carry from register E is now safely tucked into register D

0000 0001 0000 0100

and the register pair DE holds the correct result $256+4=260$.

Division by powers of two moves bits to the right. Take for example the value of 6 in register E

0000 0110

After

SRA E

The bit pattern will be

0000 0011

which is the correct result 3. Carry flag is reset because the rightmost bit 0 fell into it. Now do SRA again to divide 3 by 2

0000 0001

The exact result would be 1.5 but since integers can't have fractions, the result is rounded off to 1. The Carry flag is now set because the rightmost 1 fell into it, which tells us that the exact result cannot be represented in integer form.

Bit conversions

To display a binary value in decimal or hex form we have been using our subroutines BINDEC (CN80 89/9:9, Z80 Tutor I:24) and BINHEX (CN80 89/11:9, Z80 Tutor I:31). Similar routines could display bit patterns of binary values. The "rotate" instructions make it a breeze. Suppose we want to convert register A.

```

;-----
;BINBIT convert A to 8-bit string
;  DE=address ASCII hold buffer
;-----
BINBIT: LD      B,8          ;8 rotations
PLUCK:  RLCA              ;rotate
        PUSH    AF          ;save A
        LD      A,'0'       ;assume bit 0
        JR      NC,ASCOK    ;yes, else
        INC     A            ;make it '1'
ASCOK:  LD      (DE),A       ;store it
        POP     AF          ;get back A
        INC     DE           ;next hold slot
        DJNZ    PLUCK       ;more, else
        RET              ;done
;-----

```

The routine is a DJNZ loop of 8 rotations which "pluck" one-by-one each bit. After each rotation the status of Carry indicates whether 0 or 1 "fell out" of the leftmost bit position. You could modify our ASKEY program (CN80 89/9:11, Z80 Tutor I:25) to see in binary form the codes generated by pressing any key: make the HOLD buffer 8 characters long plus the terminator, delete two lines LD L,A and LD H,0 just after JR Z,EXIT and replace all references to BINDEC by BINBIT.

Conversion of a 2-byte value in HL is a "synchronized" rotation of all 16 bits.

```
;-----  
;BINBIX convert HL to 16-bit string  
;   DE=address ASCII hold buffer  
;-----  
BINBIX: LD    B,16      ;16 rotations  
PLUCK:  RL    L         ;low byte  
        RL    H         ;high byte  
        LD    A,'0'     ;assume bit 0  
        JR    NC,ASCOK  ;yes, else  
        INC   A         ;make it '1'  
ASCOK:  LD    (DE),A    ;store it  
        INC   DE        ;next hold slot  
        DJNZ  PLUCK     ;more?  
        RET            ;done  
;-----
```

Finally the reverse conversion of an ASCII string of 0's and 1's might look like this:

```
;-----  
;BIXBIN convert bit string to HL  
;   DE=address of string buffer  
;-----  
BIXBIN: LD    B,16      ;max 16 bits  
        LD    HL,0      ;initialize  
BIX2:   LD    A,(DE)    ;get character  
        CP    '0'       ;is it '0' ?  
        JR    Z,BITOK   ;yes  
        CP    '1'       ;is it '1' ?  
        RET    NZ       ;no, quit, else  
        SCF           ;set carry  
BITOK:  RL    L         ;stuff carry  
        RL    H         ;and rotate  
        INC   DE        ;next hold slot  
        DJNZ  BIX2     ;more?  
        RET            ;no, all done  
;-----
```

If a character in the buffer is equal to '0' then the first CP instruction sets Z-flag, but also resets Carry (carry is always reset when the comparison is equal) and we jump directly to BITOK (bit okay). If not '0' then check if '1' and quit if any other character has been found. If it is '1' then Carry would be again automatically reset by the comparison. So we must "manually" force it to be set.

.....

SCF
Set Carry Flag. Simply does what it says. Speaking about SCF we should also mention its friend:

CCF
Complement Carry Flag. The flag is changed to its opposite: if it was set before then after CCF it's reset, and the other way around.

.....

Anyway, at the label BITOK we "stuff" the Carry flag (0 or 1 as the case may be) into the rightmost bit of the low register, while its leftmost bit is forwarded by the next RL instruction into the high register. The DJNZ loop stops when a character other than '0' or '1' is found in the buffer, or when 16 characters have been converted.

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POSTSCRIPT to Don Ady's EXTERNAL DRIVE INSTALLATION (Vol 3 No. 7, Page 1)

PS on the replacing external drives: some oddballs.

Most external drive replacements are simple plug and run. Now I have tried two more that would not work. In one case, the power supply had normal wires with +12V, +4V, and two return lines as is normal. It wouldn't run anything new I tried. The one oddity noticed: an isolation transformer. +12V for instance measured zero volts to chassis ground.

Some drives work on M1 in double density, but not all will. One removed from M4D, made by TEC, will not. At first it seems to give a good disk for COPY 0 1 with DIR looking normal enough. But, the disk won't BOOT. Text files read back have all the wrong data (sector numbers scrambled). Used on drive :0, it can not BOOT perfectly good diskettes that normally work there.
-Don Ady

REMINDER TIME AGAIN

If the last four digits on your mailing label is 90/09 this is your last issue.

Time to send in your renewal.

BUSY CALCULATIONS

by David Goben

In this semi-regular column I hope to address those aspects of using a spreadsheet which concern you, as a user. My main focus will be on the new user, and the user of Busy-Calc in particular. However, due to Busy-Calc and VisiCalc being better than 95 per cent compatible, the VisiCalc user can follow as well. Other spreadsheets will be covered as needed.

One of the big "introductory" features in this column is a program that will convert VisiCalc files to Busy-Calc format -- a feature that many of you have been asking for. In the future other useful utilities will be provided as they are developed.

But the content of this column will depend solely upon you, your idea submissions, and your questions. So if you want to see more of this column, it will be up to you to submit material, either in the form of questions, or as hints and tips for using spreadsheets.

Since the release of Busy-Calc, I have received numerous inquiries about my Busy-Calc package (and many complements -- thank you) about the Busy-Calc spreadsheet program. I will attempt to answer them enmasse here.

WHAT IS A SPREADSHEET

A Spreadsheet, in the form of an "electronic" spreadsheet, as it is presented in Busy-Calc, is a matrix of intersecting columns and rows. Each intersection is called a cell, and the column and row common to each cell is called its coordinate. Each cell can contain a label, a value, or a formula. A label is a non-calculating string of text that you can use to indicate within the spreadsheet what values are for, such as headings, or even separating lines. A value is a numerical constant. A formula is an mathematical equation that results in a numerical value.

The real power behind Busy-Calc is in its ability to reference the values of other cells within any given formula. This is much like using variables within a BASIC program. This feature allows you to change a single value, and any cell that references the value of that cell can be automatically

updated without you having to pull out an eraser and calculator to recompute the spreadsheet. Busy-Calc will do all of this for you. This is why spreadsheet programs are so popular: They save us literally -hours- of time that would have otherwise been spent refiguring the entire sheet.

WHAT IS BUSY-CALC

Busy-Calc is a full-featured electronic spreadsheet program, which provides you with all the editing tools you need to write, save, and reload powerful, sophisticated templates and layouts. Busy-Calc supports an extensively wide range of commands and functions, which surpass most spreadsheet programs, and brings it upon a par with that of VisiCalc and Multiplan.

When I was first approached by Stan at CN80 in November of 1989, and was asked if I would be interested in writing a spreadsheet program, I had at the time quickly declined. Although I was sure that I could write one, the one thing I dreaded most from such a project was the "flack" I would receive from "heavy" users of other spreadsheet programs, who would pointlessly expound upon this feature or that feature. Or those who would want to compare programs feature for feature. This is a very infantile approach, and should never be brought into the evaluation of a product, as a product should always be graded upon its ability to perform a task that it was designed to do, not upon its ability to do a task in a way even remotely similar to some other program. My feeling is, if you are happy with your spreadsheet, stick with it, and not some other. Besides, users who cut their teeth on Busy-Calc can easily take the same tact against other spreadsheet programs.

Regardless, the concept of writing such a program, and the fact that current users of the Model 4 were now in need of one (due to VisiCalc and Multiplan being pulled off the market) was just too much to ignore, and I was soon designing flowcharts that eventually became program segments, and finally formed into a functioning application program.

Busy-Calc was never meant to be a replacement for any other full-featured spreadsheet program. My advice to anyone who is presently happy with their current

spreadsheet program is to not invest in Busy-Calcul. Busy-Calcul was designed to fill the gap left by VisiCalc and Multiplan being taken off the market, giving the opportunity to those who presently need a spreadsheet to obtain one. Of course, one good thing about Busy-Calcul is that it is currently the -only- full-featured spreadsheet program on the market that is -still- fully supported.

The fact is, although Busy-Calcul is better than 95% compatible with VisiCalc, I had originally never meant for it to be so. My intent was to develop a spreadsheet program that simply did what spreadsheets were expected to do. But as the development of Busy-Calcul progressed, I realized that as far as functions and commands were concerned, Busy-Calcul and VisiCalc were becoming more and more similar. I think this was due mainly to the "common sense" approach that VisiCalc had taken. It provided the commands you would expect to perform a task, and in general provided the functions that most people would need. What I ended up with was a program that looked like VisiCalc, and in most respects functioned like VisiCalc (though MUCH faster).

The only commands that differ from VisiCalc is that Busy-Calcul does not support windows (though it does support the more commonly used Titles feature), and due to lack of program space, the replication feature is more limited. Busy-Calcul support all VisiCalc functions except for @CHOOSE (which can be emulated using @LOOKUP), and @NPV, which is probably the least-used function in VisiCalc (the fact is, when I asked several VisiCalc "power users" about the @NPV function, not one of them knew that VisiCalc even supported such a function — let alone the fact that they did not know what such a function would be used for, though I'm sure there are a few out there who might).

Of course Busy-Calcul also supports many features which VisiCalc lacks. For example, being a -former- VisiCalc user, I was always frustrated with the fact that the @SUM function allowed you to only sum on a single row or column, when what I actually needed to do was sum a whole range of rows and columns. Because many other users were just as frustrated, I built this ability into Busy-Calcul.

VARIABLE WIDTH COLUMNS

A question a few asked was if Busy-Calcul supported variable width columns. No, it does not. Like VisiCalc, it uses fixed-width columns, which can be varied enmasse. When I was first developing Busy-Calcul, I experimented with this, and found that, like Multiplan, using variable width columns not only ate up a tremendous amount of program space, but also slowed the program down -considerably-. Because of this I chose not to support this feature. Also, because the space I allotted myself for program use was limited, supporting such a feature would also force me to drop other features. This I would not allow. I had considered using overlays to combat this problem, but several tests proved that this slowed the program down even more.

READING VISICALC FILES

Busy-Calcul cannot read VisiCalc files. Those new to spreadsheets will not have your hearts broken over this, but those who may have a large VisiCalc layout library, and are wanting to move up from the Model III version of VisiCalc to the Model 4 mode (and no availability of Model 4 VisiCalc in sight), may be concerned. Because of this, included in the program listing section of this issue of CN80 is a BASIC program (see program listing number one) called VC2BC/BAS, which will convert a VisiCalc file (written using the /SS VisiCalc Storage Save command), to a form readable by Busy-Calcul.

To use the program, type it into Model 4 Disk BASIC, save it to a file called VC2BC/BAS, and RUN it. You will be prompted for the VisiCalc file to convert. If you do not include an extension, /VC will be automatically added. You can include a drive extension if you desire. VC2BC will then take the name of the file and add a /BC extension for the Busy-Calcul conversion file. You will then be asked which drive you wish it to be placed on. It can be the same drive as the VisiCalc file, since the VisiCalc file will not be altered. Once you answer the prompt, VC2BC will scan the VC file for format settings, and then begin translating the data to a form readable by Busy-Calcul, and writing this data to the BC file. As VC2BC works on each cell, it will display the cell coordinate name it is currently working with. When VC2BC/BAS is finished, the BASIC Ready prompt will be

returned to. Now you can return to DOS by entering SYSTEM and then execute Busy-Calcul and load the new file. Be aware that since the file will not have any pre-figured values present, as a normal Busy-Calcul file will, you will need to type "!" to recalculate the spreadsheet in order to update its stored values.

Please be aware that VC2BC/BAS does not do any form of formula modification, except in the case of the VisiCalc @CHOOSE and @NPV functions, which will be converted to @ERROR. Also, be sure that the limits of the VisiCalc program does not exceed Row 63, as Busy-Calcul supports only a spreadsheet size of 64 x 64 (40 x 100 if you applied the patches presented in Volume 3.7 of CN80).

Though most VisiCalc programs will translate without a problem, you should check to ensure that the formulas used in the VisiCalc program are compatible with the syntax required by Busy-Calcul. Although VisiCalc can use the formulas used by Busy-Calcul, Busy-Calcul is more restrictive in order to "idiot-proof" the formulas. For example, in VisiCalc, you could use a formula such as @LOOKUP(A23/7,B8...B15). Busy-Calcul will require that the "A23/7" sub-formula be stored in a separate coordinate, such as A22, stored (as expected) as +A23/7, and then you could use @LOOKUP(A22,B8...B15). VisiCalc can also use this latter format, which is also more commonly used.

One way to check for proper syntax is to compare the formulas against what is expected in the Busy-Calcul Quick Reference Guide. However, I usually use the "bulldog" approach, which is to convert the file, load it into Busy-Calcul, recalculate, and then look for cells reporting an ERROR (it seems to be much faster, as I seldom find error reports).

CONCLUSION

Now that we have been properly introduced to Busy-Calcul, and now have a program to convert our favorite VisiCalc layouts to Busy-Calcul format, we are ready to get into more general material. Send any spreadsheet tip, hints, or questions to me in care of Computer News 80. Lets get to building that next column. Happy spreadsheeting!

-David Goblen

MODEL 4 PLAYS WITH THE BIG BOYS

by Douglas Kelly

SHARING DATA

At the company I work for, "Do the job once" is an important concept. Computers can help by allowing a user to entering data just once and share that data.

STANDARDS: Computers and Software

It helps to have a "standard" type of computer and software, but it is not always practical. Standards change over time. We now have at least three standards caused by advances in hardware and software. We have standard CP/M computers from the early 1980's, standard PC/XTs from the mid 1980's, standard ATs and Macintoshes from the late 1980's. Our software has also evolved over time. We started with Wordstar and Supercalc (in the early 1980's) we added Lotus 123 (in the mid 1980's) Now we have added Microsoft Word and Excel for compatibility between our MACs and ATs. We have many other types "non-standard" of software to contend with as well.

Many PC magazines talk about the "need" to upgrade to the latest and greatest. The cost of replacing the old hardware and software is often prohibitive. In our company (like many others) the PCs are used until they "fall apart" then they are replaced.

MODEL 4: Still On The Job.

Trying to keep up with these "new" standards is difficult and expensive, especially when the money comes out of your own pocket. I have found it to be very cost effective to use my Model 4 for work-at-home projects.

I use my Model 4 to create text files that are incorporated into engineering reports, work instructions, and documentation. I transfer these files to MS-DOS disk using the Supercross version of Hypercross (I also have PC Cross-Zap). I take the disk up to the PC lab and upload the files to a VAX 8810 via Kermit file transfer.

I can upload files from home via modem, but the dial-in lines are limited to 2400 baud. The direct lines in the PC lab are 9600 baud. Most of the time, I bring a disk to the lab and transfer my files. When using

my Model 4, Fast Term and a 2400 baud modem connects me to the VAX. Fast Term does not support Kermit protocol, but it is menu driven and easy to use. Fast Term also features VT100 emulation. I have not had the need to test this mode yet.

GENERATING TEXT.

On my Model 4 I generate text files using Scripsit. The Vax requires that certain codes be included in the text to make "pretty laser prints". I insert these codes into my text. Many are as simple as ".b" for blank line and ".p" for page break. Scripsit ignores these codes, so I can make check prints at home. No Scripsit formatting commands are included in the file, since that would confuse the Vax.

TRANSFERRING FILES.

FROM MODEL 4 TO PC (Supercross).

I save the text file to a working copy of my Supercross disk. After exiting Scripsit, I type SX4. Supercross is menu driven. The first menu asks what kind of DOS is on the Model 4, TRSDOS 6.X is my response. The next menu asks what kind of "foreign" disk I have. MSDOS 2X/3X single sided is my response.

This brings me to the main menu. The main menu contains functions for formatting a "foreign" disk, transferring files to a foreign disk, transferring files from a foreign disk and other options. If I do not have a MSDOS disk handy, I put a blank disk in drive 1 and choose the format foreign disk option. Next I choose the option for transferring files to a foreign disk. Supercross asks if I want to transfer just ASCII or an image. Since it is just text, I choose ASCII. Image can be used for basic programs, Multiplan files, Visicalc files, etc. When the transfer is complete, I exit Supercross.

FROM PC TO VAX (via Kermit).

I take the MSDOS disk to the PC lab. I put the disk into the floppy drive and type Kermit. Kermit responds with the MS-KERMIT> prompt. I type CONNECT and press the return key a couple of times. The terminal server responds with the LOCAL> prompt. I type C VAXA. The Vax then ask me for my user name and charge number. The Vax responds with the VAXA> prompt. At the VAXA> prompt I type KERMIT.

Kermit responds with the VAX-KERMIT> prompt. With both the PC and Vax talking "Kermit" I can transfer my file. At the VAX-KERMIT> prompt I type SERVER. Next I press the <CTRL> (right bracket") and <C> keys. This returns me to the MS-KERMIT> prompt. Now the Vax will do what the PC tells it. I type SEND FILENAME.TXT. Kermit transfers the file to the Vax. When it is done, I type the command BYE. This disconnects the PC from the Vax and exits Kermit. From the terminal at my desk, I do any final editing. Then I tell the Vax to format and laser print my document.

You can also move files from the Vax to the PC to the Model 4. Basically, you just reverse the process above. Most of the time, I need to send data up to the Vax. This procedure could be used with most any mainframe or mini computers, since Kermit is available on most of them. There are also CP/M versions of Kermit. The generic CP/M version of Kermit should work with Model 4 CPM. Using CPM-KERMIT> You can use the procedure above to transfer files.

USING MODEL 4 FILES ON PC

FROM SCRIPSIT TO MICROSOFT WRITE AND WORD.

It is also possible to use Model 4 files directly on a PC. The PC word processor I use is Microsoft Write. It is included with Microsoft Windows. To make the transfer easy I give my Scripsit files the extension /txt. Write looks for the *.txt extension when it opens ASCII files.

To open the file inside Write, select the file menu. Choose open from the menu. Type the name of the file you want to open (i.e. A:FILENAME.TXT) and press return. Microsoft Write is used for simple text editing. When we consolidate documents into master report, we save our file in Microsoft Word format. From inside Write, select the file menu. Choose save as from the menu. Select Microsoft Word format. Type the name of the file you want to save (i.e. A:FILENAME.DOC) and press return. A secretary then consolidates and formats the final report. A couple of our Mac SE computers even read MSDOS disk, so the report can be "dressed up" and laser printed.

FROM MODEL 4 MULTIPLAN TO MICROSOFT EXCEL

I have not gotten a chance to test this out but the instructions below are based on the Excel Reference Guide. Save the Multiplan worksheet as a Sylk file. Select the Multiplan menu for TRANSFER OPTIONS COMMAND TRANSFER SAVE. Move the /SLK file to an MSDOS disk. To open the file inside Excel, select the file menu. Choose open from the menu. Type the name of the file you want to open (i.e. A:FILENAME.SLK) and press return. Excel automatically converts formulas and displays messages for formulas it can not convert. It will preserve values of formulas it can not convert.

You can even send data back from Excel. Select the file menu. Choose save as from the menu. Choose options and under file format select Sylk. Type the name of the file you want to save: (i.e. A:FILENAME.SLK) and press return.

Transferring to and from Excel works best with plain data (even for the MSDOS version of Multiplan). Some formulas may not transfer.

FROM MODEL 4 VISICALC TO MICROSOFT EXCEL - DIF FILES:

Visicalc DIF files provide a direct route to Excel. Save the Visicalc worksheet as a DIF file. Move the /DIF file to an MSDOS disk. To open the file inside Excel, select the file menu. Choose open from the menu. Type the name of the file you want to open (i.e. A:FILENAME.DIF) and press return.

You can even send data back from Excel. Select the file menu. Choose save as from the menu. Choose options and under file format select DIF. Type the name of the file you want to save (i.e. A:FILENAME.DIF) and press return.

FROM MODEL 4 DATABASES TO MICROSOFT EXCEL

Excel can also open and save a document that is normal text (ASCII), comma separated values (CSA), and dBase II. To load the files You use use the method listed under "DIF Files" (above). Substitute A:FILENAME.CSA (or DBF) for the file name. Using dBase II requires Model 4 CPM. Some Model 4 data bases can also write DIF files.

FROM MODEL 4 VISICALC TO LOTUS 123 TO EXCEL

Lotus 123 can import Visicalc via the Translate utility. Make sure the disk that contain the Translate utility is in the correct drive. Type TRANS at the DOS prompt.

Translate will ask "What do you want to translate FROM". Select Visicalc from the menu.

Translate then asks "What do you want to translate to". You may Select 123 release 1A (or 2) from the menu. You can also translate to Symphony.

DIF FILES: Visicalc DIF files are translated the same way. Translate will ask "What do you want to translate FROM". Select DIF from the menu.

When the Visicalc worksheet is saved in Lotus *.WKS (or *.WK1) format, it can be it can be directly loaded into EXCEL. Just use the method listed under "DIF Files" (above in the Excel section). Substitute A:FILENAME.WKS (or WK1) for the file name.

FROM MODEL 4 DATA BASES TO LOTUS 123

Model 4 dBase II files are translated the same way. Translate will ask "What do you want to translate FROM". Select dBase II from the menu. Using dBase II requires Model 4 CP/M.

Some Model 4 data bases can write DIF files. The DIF files can be imported via the Translate utility.

Lotus 123 can directly import ASCII files. Inside 123 press the slash "/" key. Select File Import. You have two options. The "Numbers" option treats each line of the file as Numbers and quoted labels. Everything else is ignored. You then enter the filename. It should have a .PRN extension.

The "Text" option treats each line of the file as a single label. The /Data Parse command is used to this column of labels into several columns of labels or numbers. The 123 manual details the use of this command. Lotus Magazine often runs article and letters the import and Parsing of ASCII

data.

I think 123 data can be converted to DIF and dBase II format. I do not have software or a manual, so I can not verify that is included with the 123 package. ASCII files can be created via the /Print File command, so it is possible to export data that way.

MODEL 4, THANKS FOR YOUR SUPPORT
I deal with computers so much during work, I have no interest in purchasing an MS-DOS PC for home use. Thanks so much for Computer News80. It allows me to get the maximum use out of my Model 4 when I do work at home. My computer usage includes VAX, Macintosh, IBM XT and AT clones. Of all the computers I use, the Model 4 is still my favorite.
-Douglas Kelley

(Editors Note:) As the article by Mr. Kelley points out, there is really no need to feel that your TRS-80 computer can not talk to other computers and as Lee Rice's work with laser printers also points out. There is no need to switch to an IBM just because you don't think that it will do the job that an MS-DOS machine will do.

The price of the MS-DOS computers is falling every day, but still quite expensive, and the price of any major piece of software that is being pushed for them is out of sight.

Therein lies the food for thought. At one point in time you could get quite a bit for your used TRS-80 - not so any more. It only makes sense that you could be a two DOS user, many of our subscribers to CN80 are. And the reports keep flooding in to the effect that people are really glad they kept their TRS-80 computer even though they have added an MS machine. The bulk of the messages we get say "I can do so many things on the TRS-80, faster, simpler and without a lot of expensive hardware. For a lot of applications I use it more than I do my MS computer." It is really a shame that so many have practically given their Model 4s away for a few dollars, only to find out after they get started on a new MS computer that they wished they still had their TRS-80. As we said the prices are such now that you can afford to be a TWO-DOS user. And if you can't afford to be a TWO-DOS user now, then don't fret

your good ol' TRS-80 will do a lot of things I bet you didn't know it would do. Even things that Mushy/Messy Dos can't do. -Ed.

A VISIT WITH DAVID GOBEN
by David Goben

PROGRAM BUGS

In my DEA package, I found an obscure bug in my CREF Cross Referencing program. It is small, and you will not find it if it is processing referenced or included files that are less than 128 sectors (16K) in length. Because of this, I think that is why no one has yet reported this problem. Needless to say I write big ones, and that is probably why I found it first. By the way, those of you who do machine language programming with DEA and have not used CREF don't know what you are missing. This program gives you a -highly- detailed map of what labels are used where, and by what files at any location. Using such a "map" allows you to make major changes in a program without missing anything, because you can check the list to see what other routines might be affected by each change.

Anyway, to fix this bug for CREF version 1.0.0, from the DOS level, use the PTCH/CMD included in the DEA package to apply the following 4 patch lines (notice that PTCH uses the same syntax as Model III TRSDOS 1.3 PATCH):

```
PTCH CREF (5A60,FIND=F2,CHG=C3)
PTCH CREF (5A8F,FIND=20,CHG=32)
PTCH CREF (5B99,FIND=CD,CHG=C4)
PTCH CREF (5E93,FIND=30,CHG=31)
```

If you have obtained the Version 2 enhancement upgrade, you should instead use the following 4 patch lines:

```
PTCH CREF (5A60,FIND=F2,CHG=C3)
PTCH CREF (5A8F,FIND=20,CHG=32)
PTCH CREF (5B90,FIND=CD,CHG=C4)
PTCH CREF (5E89,FIND=30,CHG=31)
```

Be sure you are using the right patch. If the patch did not 'take', then you probably used the wrong version of CREF (or the problem as already been fixed). Simply type

CREF and the version number will be displayed.

While I am on the subject of CREF, you may notice that it will not accept a `"*GET"` or `".GET"` command, although it will accept `"*INCLUDE"` or `".INCLUDE"`. CREF had been written before I had decided to add `"*GET"` as an alternative to `"*INCLUDE"`. Therefore, if you plan on using CREF, be sure to use the `*INCLUDE` directive instead of the shorter `*GET`. If you, on the other hand, prefer using `*GET`, then you can patch CREF to accept it, but you cannot afterward use `*INCLUDE`, unless you "reverse" the patch. The patch for version 1 of CREF is `PTCH CREF (ADD=6123,FIND=49,CHG=47)`. For version 2 of CREF, the patch is `PTCH CREF (ADD=6119,FIND=49,CHG=47)`.

PRINT/CMD BUG

In DAVID'S MODEL 4 SYSTEMS UTILITIES PACKAGE, version 1.3 of the PRINT/CMD program has a bug in it. Apparently when I was adding comments to the source listing, I added a couple of misplaced block comment markers that caused a portion of the program not to be assembled (and I thought I was doing myself a favor by clarifying the program comments). This patch upgrades PRINT/CMD to version 1.4. You can check your version of the program by simply entering the command PRINT from the DOS level (providing PRINT/CMD is on a mounted disk). If the version is 1.4, then the patch has already been applied. If it is version 1.3, you must build a file called PRINT/FIX, and enter the following lines:

```
. PRINT/FIX
. UPDATE PRINT/CMD 1.3 TO 1.4
. DAVID M4 FILE UTILITIES
. Apply using:
. PATCH PRINT PRINT
.
X'2649'=00 03
X'2656'=CD A1 29
X'265E'=00 02
X'2671'=CD AB 29
X'26C1'=34
X'29A1'=57 79 87 87 81 87 82 4F 23 C9
X'29AB'=57 79 87 87 87 18 F4
. EOP=====
```

Press BREAK or SHIFT-CTRL-@ and apply the patch using the command `PATCH PRINT PRINT`.

DOING IT ON A LASER -- PART 3

Some of you are probably aware that I have been working on a SuperSCRIPT and a Script PRO driver for the laser printers. I have recently completed a test version of my FX-80 mode support version. What's nice about it is that even though the FX-80 (mode) does not support proportional spacing, I have made use of the double density graphics mode within the FX-80 command structure to in fact do this, so that the FX-80 will in fact support such a feature. I've also been testing this driver on my Epson Apex 80 (also called the Action Printer). In fact, it will support any Epson dot matrix printer that supports the double density graphics mode (120 dots per inch). The results are quite impressive. The only draw-back is that it prints much slower, since it is actually sending more data to the printer because of the constant switching between text and graphics modes. I also have a test version that will support the LaserJet (mode). The next step is to allow changing fonts in justified text (currently possible within the same point-sizes). This project is getting pretty exciting. So stay tuned to this column.

In our last installment, we learned how to make the laser printer friendlier to our TRS-80's by sending automatic linefeeds after carriage returns. We also learned how to cause it to do line wrap, in case we may be printing long program lines in a listing.

The next thing we must be aware of is how the printer works with paper, as far as it kicks out printed text goes. No, I am not going to bother telling how the photoconductors do their thing, or talk about corona wires and other esoteric trivia -- leave that for the many books already published on the subject, as though that info concerns us daily joes. What we will cover is what you see on the paper after it has been printed.

TEXT FIELDS

We have learned in our last installment that the start-up defaults are 10 pitch (fixed) Courier. We also learned that we could change this to 12 pitch using the `CHR$(27)"&k10H"`; `lprint` command, which tells the Horizontal Motion Indexing mechanism that each character will fit in a space 10 "units" wide, rather than 12 (10

units gives it a narrower space, so more characters can fit on a line). We could change this to 15 pitch by reducing the Horizontal Motion Index to 7.

The formula for setting the "pitch" value using the standard Courier 10 font is $10 - nn + 12$, where nn is the desired pitch value. Thus for 12 pitch, $10 - 12$ equals -2 , plus 12 equals 10. Thus we use `LPRINT CHR$(27)"&k10H"`; to select 12 pitch. Of course this range is limited, because we are still using the same point-sized (12 point) font. If you noticed, the previous statement gave you an important clue about laser fonts: the point size is also the Horizontal Motion Index offset!

But going on, we should also be aware of the printable text limits upon the page. The start-up default on the laser is 6 lines per inch of vertical space on a standard 11 x 8.5 inch sheet of paper. Also, the printable field is limited to 1/2 inch below the top of the page, and 1/2 in. above the bottom of the page. Horizontally, text begins 1/4 inch in from the left edge of the paper, and 1/4" in from the right edge of the paper. What this means is that when using a laser printer, we should also work with "logical" page dimensions rather than "physical" page dimensions. Thus we should see an 11 x 8.5 sheet of paper as a logical 10 x 8 sheet of paper. What all this ends up being is 60 lines (10 inches) of text that is (at 10 pitch) 80 characters across. At 12 pitch we have 12 times 8, or 96 characters on a line.

The important thing you must remember about these margin limits for our "logical" page is that you must adjust your document defaults within your word processor accordingly, since the text output will start 1/4 inch from the left of the page, and 1/2 inch down from the top of the page by default.

If you desire to change the number of lines per page, you can do so quite easily. First, suppose you want to print text as 6 lines per inch on legal sized paper, which is 14 inches long, or 84 physical lines (14 times 6), we must tell the printer to change the page length from the default of 66 lines (60 printable). We do this using the `CHR$(27)"&/48P"`; command (please NOTE that the slash "/" should be typed in as a lower-case L, as I explained in my last

installment, as the lower case L and the number 1 (one) are almost indistinguishable on the printed page). This sets the page up for 48 lines (42 printable).

If, however, you wish to change the lines per inch instead of the page length, you would use the `CHR$(27)"&/nD"`; command, where "n" represents the desired lines per inch. By default, the printer is set to 6 lpi, but we can easily change it to 8 lpi by using `CHR$(27)"&/8D"`;. We can change it back to 6 lpi by using `CHR$(27)"&/6D"`;

Another feature worth examining is forward and reverse half linefeeds, important for superscripting and subscripting. The LaserJet PCL contains a command that allows you to control the positioning of the cursor position (print position) in relation to the currently set lines per inch setting. This command is in the form `CHR$(27)"anR"`;, where "n" is the number of lines to move the print position, led by "+" or "-". For reverse (upward) motion, you would use a negative value. You can also use fractions. For a reverse 1/2 line feed, you would use the `CHR$(27)"a-.5R"`; command. A forward 1/2 linefeed is even easier, since the LaserJet PCL contains another command specifically for this purpose, which is `CHR$(27)"="`;. This is -much- shorter than using `CHR$(27)"a+.5R"`; to accomplish the same thing. Another feature that you may wish to take advantage of is the Specify Top Margin command. This may be important if your word processor simply begins printing at the currently set printer head position, and does not do any initial line advanced for a top margin. This may work fine on continuous feed paper, but unlike standard printers, when the laser ejects a page, it does not automatically roll the "pinch roller" forward. The LaserJet PCL contains the `CHR$(27)"&/nE"`; command, where "n" specifies the number of lines to be skipped (and "/" should be a lower case "L"). If you wish the top margin to be 1 inch from the top at 6 lines per inch, you would use the `CHR$(27)"&/6E"`; command. Of course you must also adjust your page length accordingly. Experimentation may be in order to get the right compensation.

Of course, even though the laser does not operate on paper the same way that a continuous feed printer might, the laser

=does= have, oddly enough, a Perforation Skip Mode. This is handy because when printing to the laser, the "printer head" might enter into the "invisible" bottom margin area, where it will "think" it is still printing. A way to avoid this is with the CHR\$(27)"&/1L"; command. This tells the laser to stop printing at the bottom margin and continue printing on the top (visible) margin of the next page.

CONCLUSION

We now have enough information to properly format the printed text on our printers and to communicate in a friendly fashion with the TRS-80, although you should look on your own at your printer manual and study some of the "neat" featured not covered here, such as how to set horizontal margins, or setting text length (as opposed to page length). Things will get more interesting when we get into downloading fonts from disk, which will be covered in my next visit. So stay tuned, and happy computing!

-David Goblen

(Editors Note:) The following are Dot Matrix and Laser Print drivers currently available which are published and distributed by Computer News 80. More are to follow such as an Allwrite print driver for the inkjet printers and other possible drivers based upon the demand.

David Goblen's Laser Print Drivers and Dot Matrix FX-80 drivers presently consists of four separate disk packages with documentation. These drivers will also support Laser Printers in the FX-80 mode, but for the best results you should use the print drivers programmed to support the HP mode on your laser printer. They are:

SuperScripsit HP Laser driver for Model I, Model III, and Model 4/4P/4D SuperScripsit.
Price: \$20.00

Scripsit Pro HP Laser driver for Model 4/4P/4D Scripsit Pro.
Price \$20.00

SuperScripsit driver for FX80 (compatible) Dot Matrix printers for Model I, Model III and Model 4/4P/4D Superscripsit.
Price \$17.95

Scripsit Pro driver for FX80 (compatible) Dot Matrix printers, for Scripsit Pro Model 4/4P/4D.
Price \$ 17.95

Lee C. Rice and Gary Shanafelt's HP Laser Support Package for Allwrite consists of one set of disks and documentation.
Price \$20.00

Add Shipping and Handling for the above packages. \$2.00 for delivery in the US, \$3.00 for AK, HI, FPO, APO and Canada. Others add \$4.00 per package.

All of these drivers will support proportional print spacing with right hand justification. Proportional printing with right hand justification has been lacking in all the previous print drivers that were produced for these word processing programs.

The File Cabinet will have a separate section devoted to Downloadable Softfonts that can be used on Laser printers. We hope to have most of them available in time to publish the list in our next issue.

We welcome your suggestions and requests concerning these packages. A Custom print driver service is also in the works, but more on that in later issues.

We certainly appreciate all the work that has gone into the development of these support packages by the various people involved. We sincerely hope that you will appreciate them too.

Times Roman

Proportional pitch, with serifs
normal 24 point

Helvetica

Proportional pitch, without serifs
normal 24 point

BOLD TIMES ROMAN 10 POINT

ITALICSS TIMES ROMAN 10 POINT

TYPEWRITER Typewriter

Typewriter bold

MARK REED'S MODEL 4 UTILITY DISK REVIEW

by Henry H. Herrdegen.

Mark has come up with 6 short (1.5K each) programs, for TRSDOS 6.2 or LS-DOS 6.3, which could close a gap in your file of the many published utilities for those DOSSs.

The first one, CMDEDIT, lets you correct a typed DOS command in the manner of a word processor, move the cursor left and right, insert, delete and over type. If the machine comes back with an error, up arrow will bring the bum command back on the screen, to correct it without retyping the whole shebang. But, most disturbing to me, it cancels the command repeat feature, <CTRL><R>, if you have it. Once installed, it announces itself by a colon after the ready prompt, and it can be SYSGEN'ed. It requires the SYS13/SYS file be on the disk.

The second, CMDSTORE, could be of use if you are using a limited number of long DOS commands a lot. If activated, it stores any command you type in high memory, and you can scroll thru this list with the up/down arrows, then just punch <ENTER> to invoke the shown command. The default is five, but it can store up to 16 commands. It's quicker to type DIR then to scroll thru 16 commands, the trouble is, that if your pre-set command file is full, and you type another command, it will replace one in storage, but which one, you will not know, unless you look at the list again. CMDEDIT can alter stored commands, as they are recalled.

The MAPMEM command will show you the memory modules presently installed in low and high memory. It will show for instance, that CMDSTORE (the module for some unclear reason called CMDEDIT), set to 16 lines, occupies high memory from X'FBFE to X'FFFF, 1281 bytes.

RECLAIM can remove high memory modules, especially filters which, to quote the author, "are not smart enough to remove themselves". You have a choice to state the number (default=1) of modules you want removed, up to 255, or an "A" option, which will try to remove all unused modules, and, if encountering one still in use, will show an error, and return to DOS.

The next, SWAP, is supposed to exchange disk drive numbers. The manual implies, by not mentioning dr 0, that 1, 2 & 3 can be swapped. Which appeared to be true, since a SWAP :0 :1 results in the infamous ERROR 07H. Having only 2 drives, I could not verify this item. The idea is, if your program wants to save data on dr 1, but you want them on a disk in dr 3, you could fool it by swapping drive numbers.

The last, UNFILTER, lets you selective remove filters from a device, without using the general RESET command, removing all filters, and then re-installing the ones you wanted to keep. It does not remove the memory module, that has to be done with the RECLAIM, and the name of the module will be shown by MAPMEM, if you haven't documented it.

The slim, 10 page manual is professionally printed, stating what each file does and how the command syntax is arrived at, but gives no command examples, as Chris Fara's manuals did so enlightening. But then, it's not really necessary, for the simple commands used.

All in all, a useful addition to ones utility library, albeit a bit pricey at \$14.95 the disk \$2.00 S&H, as advertised in CN80.

An afterthought: if you run LS-DOS 6.3.1, the password required to install the CMDEDIT is not "LSIDOS", but "SYSTEM6", as Mark has written in his "CORRECTION" in the August CN80. This is not a "BUG", but something the powers to be try to confuse us with, by changing passwords, writing hex numbers with a trailing H or a leading X', and so forth.

-Henry H. Herrdegen

LIVING IN A WELL-DEFINED WORLD (Back to the Basics...)

by David P. Miller

It would seem that I fell into a common trap in last month's issue. People like myself that work in highly technical areas tend to forget the many years it took to learn what we now take for granted. After

all, once I thought I knew everything and actually knew nothing; now I know a little more and begin to realize how ignorant I truly am! In writing articles this leads to assumptions about the knowledge of the reader and I sometimes forget that the audience ranges from the novice to the expert. This is especially true in the light of the recent "fire sale" of Model 4D's. If my previous article was excessively technical for anyone, please accept my apologies; this month I'll address some of the basic concepts of high-resolution programming.

A HISTORY LESSON

When the TRS-80 Model I was first produced, memory chips were quite expensive and most home computers (all kits!) contained less than one kilobyte (1,024 bytes) of useable memory. In fact, the Model I was manufactured without lower-case character display capabilities to save the cost of 64 BYTES of memory! Anything displayed on a computer screen is a reflection of information stored somewhere in the computer, so a screen display of 64 columns wide by 16 rows high required a minimum of 1K of dedicated memory. In order to provide some sort of graphics capability, a special character set, called "block graphics" was provided. Since the character codes from 0 to 127 were defined in the ASCII standard according to how they had been used in the bad old days of teletypewriters, and the maximum value of a byte is 255, this left the remaining 128 ASCII values available for graphics and other uses.

However, the fact that graphics data had to be represented by values higher than 127 meant that only 7 bits could be used to tell the Cathode Ray Tube Controller (CRTC) which dots to display. A character position is a rectangle, and it would be impossible to evenly break a rectangle into 7 parts, so a convention of six dots per character position was developed. This is the low-resolution graphics mode provided in all TRS-80's. A character position was broken down to corresponding values in the following manner: a '1' meant to turn on a dot in the upper left corner of the character position, '2' for the upper right, '4' and '8' for the left and right center, and '16' and '32' for the bottom two dots. Adding 128 told the computer to process

the byte as graphics data. This still left the values from 192 to 255, which were used for tabbing codes.

In the Model III and 4, the values from 192 to 255 were replaced with special characters, but a mode was provided to permit compatibility with the old Model I tabbing characters.

When RAM prices started to drop, high-resolution boards were developed containing more video-dedicated memory, and a convention of 8 dots across a character position by 10 dots high was developed, corresponding to the maximum capabilities of the display. The smallest dot your TRS-80 screen can display can be seen by looking at the size of a period. In the Model 4, a connector and additional logic was provided to make installation of such a board simple. The methods of addressing the H/R board were covered in the last column, and I trust will make more sense now if they were confusing before.

ABOUT PRINTERS

Up until about 1979, the capabilities of most desktop computers were pretty much on a par. The main difference was that some computers were capable of color while others remained in monochrome (black and white, at that time). From the period 1980 on, the elements used for graphics (called 'pixels') became small enough to be called "dots" instead of "blocks". With these improved graphics display capabilities it was only a matter of time before printer manufacturers provided corresponding modes, referred to as "bit image graphics modes" to print out images. The first such mode was "normal density" or 60 dots per inch across the paper by 72 dots per inch vertically. When an image was printed turned on its' side, the result was fairly close to the screen display. This close approximation resulted from 'aspect ratios', or vertical dot density vs. horizontal dot density being similar on paper and video screen.

As the resolution of screen displays increased, more such modes were provided on printers. The standards today are "normal density" to maintain compatibility with older programs, "double density" or 120 dots per inch, and "quad density" or 240 dots per inch. At this point the printer

manufacturers stopped coming up with names and just specified the maximum dots per inch in their documentation. In addition, several printers (especially the older ones) provide some form of "block graphics" similar to the original concept used in low resolution displays. These block graphics are actual characters that can be printed in the same way as "A" to "Z", as opposed to the various bit-image graphics in which placement of each individual dot on the paper is controlled by the program.

All graphics-capable printers can print something close to normal density to obtain screen prints, and most are capable of double density for more detailed work. Most also use Epson/IBM escape codes to tell the printer to perform these functions. Quad density, while providing much better print quality, is not as universal and so is less often used by programmers wishing to market their products to as many people as possible.

-David P. Miller

THE ULTIMATE MODEL 4 by Christen M. Jespersen

Have you ever wished that you could get more on your single sided 180K disks? A case in point is trying to put additional files on the LSDOS 6.3 system disk. Unless you remove some of the files there are only 1.5K available to put any applications on the boot disk.

This problem has been resolved by many Model 4 owners by removing the 180K drives and installing 360K two sided drives, thus making an additional 180K available for programs, as well as accompanying data files. Even here it is possible to run out of disk space, especially with things like data base or word processing programs.

Being a tinkerer, I was intrigued with the prospect of carrying updating of the Model 4 to its ultimate lengths by going the next step short of getting into hard drives. This, of course, is the 3 1/2 inch 720K drive, and much to my surprise involves no more effort than putting in the 360K's. For those of you

who have not done anything along this line I will outline the steps necessary in moving up from the single sided 180K drive setup.

The first step is to lift the top off the computer by removing the ten screws from the bottom, paying attention to which of the three different types go where, and then the one which resides at the top of the back. As has been pointed out many times before, pull the power plug first, give the CRT time enough to lose its charge, and make sure the the terminal end does not snag the wires at the inside top rear when lifting off.

If the original drive cable is still hooked up it will be necessary to remove the cover from the motherboard in order to make the substitution with a revised one. This must be done for two reasons. First, the present cable must be twisted, since the card edge connectors on the new drives have the number one pin on the opposite side from the original equipment. Since the old cable is not long enough to reach after the 180 degree twist it cannot be used. In addition, there is no connection on pin 32 of the old cable, and this must be corrected when the new connectors are installed.

If your machine has already been updated with two sided drives there is no further work to be done on the cables.

My experience has been limited to Teac 720K drives, but most of the manufacturers follow the same standards so as to allow drop-in installations in the IBM compatibles. Just make sure that whatever you buy includes the 5 1/2 inch adaptor package. Although the 3 1/2 inch drives use only 5 volts the connectors are keyed properly for the standard power source that is found on the Model 4. You will notice that there are only two wires on the new drive plugs, the 12 volt line being absent.

Now, before installing the new drives they must be configured correctly. Normally, they come through jumpered for drive :1 which is usually indicated as D2. They will work very nicely as is in the drive :1 position, but drive :0 must be jumpered for D1. To make matters worse, some drives are marked D0, D1, D2, and D3. If this be the case then simply use the first two positions, D0 and D1. The drives can now be inserted

in the appropriate bins, hooked up with power and signal lines, and checked for proper operation. If there is any problem at this time it is more than likely a case of the drives not being jumpered correctly.

Assuming that all is well, the computer can now be put back together again, once more being careful not to snag the terminal end of the CRT on the wires at the top of the motherboard. The spaces at the top of the drives can be covered very nicely by using the filler plates advertised in the February 90 issue of Computer News 80 in the classified section. The kit also includes the required metric screws used to secure the drives to the tower. These filler plates must, of course, be installed before the drives are locked in place.

It is suggested that initially only Drive :1 be installed. This allows the backing up of your system and application files to the new 3 1/2 inch disks. Formatting is quite simple, and consists of typing the FORMAT command and responding to the various queries by entering "D" for density, "2" for sides, and "80" for number of cylinders. Once the disk has been formatted it can be backed up by entering the command "Backup :0 :1(I,S)." The computer automatically goes into the "Backup Reconstruct" mode to allow for the difference in disk capacity.

Once a boot disk has been created and several copies made it becomes possible to change both drives to the 3 1/2 inch type, thus allowing for 1.4 megabytes of capacity on line. The practical effect of all this is that all word processing files can be kept on the same disk as the complete DOS system and the word processing program. The same would, of course, apply to data base programs as well as any others that have extensive data files.

Another benefit resulting from this conversion is that the quality and structure of the new disks are considerably better than that of the 2S-DD 5 1/4 inch type. The 3 1/2 inch disks offer more convenience of operation and better protection for the valuable data which they contain. And, if nothing else, think of the fun you will have with this project!

-Christen M. Jespersen

Chris' article arrived just in time for this issue, as we are announcing the availability of 3-1/2" disks, double sided, double density 720 K disks in this issue at a fantastically low price of 73 cents each. And as usual you don't have to buy a boat load to get this price. These 3-1/2 disks are unmarked, but they are manufactured by a major US disk manufacturer and are the same disks that they put in their marked boxes. The best retail price we found for these or disk of equal quality was \$1.19 for 10 or more. Add \$2.50 S&H in the US for up to the first 10 3-1/2 disks and an additional \$ 2.00 for additional 10 disks per order.-CN80

TIPS FOR UNDERSTANDING PRINTER TERMS AND USING PRINTER FONTS. by CN80

A font is a collection of characters with a consistent size and typeface style. Typeface refers to the appearance of the character. Most typefaces available today on most printers come in two styles.

ROMAN TYPE, of which this magazine uses for the main text section is PROPORTIONALLY spaced, with SERIFS. The Roman type style originated in the carvings of ancient Rome. Proportionally spaced means that each letter is a different width and Serifs are the little feet or marks at the end of the main body strokes of the letter. Roman type is the most readable kind of type because the serifs added to the letter lead the eye from one letter to the next, and forms a visual line to follow. This type is generally used in most printed books and magazines. Roman type should never be underlined, it is common to use italics or bold printing to emphasize a word or phrase. Originally underlining was used on typewriters to replace the fact that they did not have italics or bold letters on their strike arm.

Helvetica, Gothic, Geneva and others are SANS-SERIF typefaces. Our program listings use this style of type in the standard 12 pitch mode. That is 12 characters per inch, each using the same amount of space per character. Sans-Serif do not have any fancy

feet or added strokes to the end of the main body strokes. This style of type can be very tiring to read for long periods of time. It is well adapted for use with short captions, headlines, ad copy, and for program listing because it has a cleaner or more distinct look per letter. And of course is easier read by electronic postal scanners so it makes the perfect type style for address labels.

Other novelty typefaces include such type as old english, hollow, and shadow type should be used sparingly or for posters or for attention getting titles in advertising copy, or letterheads.

POINTERS TO AVOID COMMON TYPESETTING MISTAKES.

When using proportional spaced fonts, you should remember that all letters are a different width, and when laying out your document you should use tabs and not spaces as you would on a typewriter, or when using fixed pitch spacing, such as 12 or 10 pitch, to line up columns.

Don't justify everything, unless you are using a proportional spaced setting. With fixed pitch a ragged right is easier to read because there is less space variation in the line of the text. Most printers that have proportional settings or if you are using a word processing print driver with proportional spaced print settings, will have right hand justification already built into the printer or print driver.

Don't use more than one or two fonts in a single document. (Typeface style, italics, boldface, and different point size heights, count as one font.) Multiple-font documents are almost always ugly. Novelty typeface styles can be very hard to read.

Last but not least, it is nice to be fancy, but you should standardize your documents, pick a style you like and stick with it. Don't face each document as if it is a new painting by Michael Angelo. Individually designing each new document takes time. But you can have the pleasure of seeing your work under different typeface (font) styles. Print your whole document several times using several different fonts and point sizes, (one font per document, remember) pick the one you like the most, rather than include several fonts on a single page.

The discussion above is not intended for or in reference to desktop publishing, which is a whole different ball game, it is intended for use in the creation of business letters, letters to friends and family, screen dump print outs, program printouts etc. -CN80

HBUILD6 and XROM/XDROM/4P-ROM by Arthur N. McAninch, Jr.

M. A. D. Software, P.O. Box 331323, Ft.Worth, Texas 76163, is producing specialized replacement ROM's for the Model 4/4P/4D computers along with some very helpful software and utilities.

This is a review of their XROM which replaces the "C" ROM in the Model 4 and allows it to boot directly from the Hard Disk drive without using a "Start-Up Diskette." As far as this author is concerned, this is the greatest little addition to the Model 4 since it was first plugged it in.

The XROM, XDROM or 4P-ROM is a single 24 pin EPROM which M.A.D. Software programs in several different versions. The specific version you need to order will depend upon whether you have a Model 4 non-gate-array, Model 4 gate-array, or a Model 4P. The other important criteria is what kind of Hard Disk Driver you are using: R/S TRSHD6, Misosys RSHARD6, Misosys MSCSI6, Powersoft Series RS, or Powersoft Series I.

When you initially order the ROM, you should order it with the software, HBUILD6. This software is also tailored to your particular hardware configuration. The software includes several valuable utilities. HBUILD6/CMD is the primary piece of software that modifies the SYS0/SYS and the BOOT/SYS on the first head of your Hard Disk. It supports placing the hard disk drivers in low or high memory. There is a new utility, FORCEHI, that allows you to force drivers to be placed in high memory instead of low memory. Another utility, XLR8SET applies the Houde patches to a system at run-time. FINDZERO locates which logical disk drive starts on head 0

(zero-based) of the primary hard disk drive.

Ordering information specifies that you should order a new "A" ROM if your non-gate array Model 4 was manufactured in 1983. The new "A" ROM has the checksum of 8F46. In addition, the older non-gate arrays have an outdated character generator which M.A.D. can supply a replacement for. My primary Model 4 is such a machine, so I ordered a new "A" ROM, a new character generator, and the HBUILD6 and XROM for the Misosys RSHARD6 driver (their part number 4BHB652). Since I am a Texas resident, I had to add the 6.25% Texas sales tax. I also added \$3.00 for shipping as per M.A.D.'s instructions. I enclosed a check, and I mailed the order on July 5. According to the Invoice that accompanied the shipment, M.A.D. received the request on July 9, processed the order on July 14, and shipped it on July 17. I received it July 18.

The order arrived safely packaged in a cushioned envelope. There were the three EPROMs in separate plastic chip holders along with some of the best documentation I have ever received. The installation of the XROM is about as straight forward and as simple as it can be; however, if you have never opened up your computer before, PLEASE take time to read through the instructions COMPLETELY and CAREFULLY BEFORE you begin. Separate instructions were provided for installing the "A" ROM, for installing the Universal Character Generator, and for installing the XROM. With each set of instructions, you are told that the installation will take about 30 minutes. Since I have opened and modified my computers numerous times, I skimmed the instructions to be certain there were no unusual requirements, and then proceeded to install all three chips at the same time. A total of 30 minutes were required from the time I disconnected all peripherals, opened it up, replaced the chips, closed it back up, and reconnected all peripherals. I then turned it on and performed the checks M.A.D. suggests. Absolutely no problems were experienced.

Then I read the documentation for HBUILD6/CMD as well as the READ/ME file and the HBUILD6/UPD file on the diskette that came in the package. After backing up the diskette and storing the original, I

issued the command HBUILD6. I was soon informed that I needed to replace SYS0/SYS on my Hard Disk with an unpatched copy of the original! This I promptly did. I then reissued the command HBUILD6, and within seconds I saw the message "Hard Disk Boot Track Installed Successfully." I had my original SYS0/SYS file patched to allow easy DATE and TIME entries on boot-up as well as a personalized boot-up greeting based on some of David Goben's patches he released for LS-DOS 6.3.0. I am running 6.3.1, and I had reworked the patches for the new locations. Obviously, the HBUILD6 patches conflicted with mine, so I spent the rest of the evening working out why, where, and how to change them. The next evening I installed my new personalized patches, and realized I don't even need to have physical drive 0 even on line at all. So I used SYSTEM(DRIVE=2,DISABLE,DRIVER="FLOPPY") and assigned one of my external 80 track double-sided drives to that slot and then SYSGEN'd the result. Now, I leave nothing in physical drive 0 and the door open, simply turn on my computer, and SHAZAM! The screen is instantly filled with the boot-up greeting which reflects the M.A.D. copyright notice. No more waiting for the floppy drive to read in the boot track and then read in the SYS0. It's all done from the hard disk in a flash.

For those who may have the NETWORK 3 or the NETWORK 4, by simply holding down the 3 key or the 4 key, the XROM will cause the computer to boot from either of those networks, respectively. Also, by holding down the BREAK key, you can boot to CASSETTE BASIC. According to the documentation, another feature to the XROM is that by using the CTRL key you can obtain all 128 ASCII characters on the screen from the keyboard; however, mine doesn't work that way. I have to press the CLEAR key with their given keys to obtain the specified characters. The XROM and HBUILD6 are compatible with LS-DOS 6.3.1, LS-DOS 6.3.0, and TRSDOS 6.2. The interrupt handler will process more than one event per hardware interrupt thus making RS-232 communications more reliable. The clock and date functions in the Model III mode will run at the correct speed regardless of what speed the CPU is running at.

The OOPS utility is extremely handy for

those of us who are poor typists, and still try to peck away at 40 wpm with mistakes. Ever enter a DOS level command that is involved and press ENTER, and only then realize you misspelled the command? After the "File Not Found" or "Syntax Error" message, you have to retype the whole command with gritted teeth! Not any longer! Simply type in OOPS, press enter, and use the arrow keys to move the cursor to the line on the screen you wish to edit and press ENTER again. Now, edit the command to your desire, and press ENTER once more. EUREKA! It works. The documentation indicates that M.A.D. has a version of OOPS/CMD available for LDOS.

M.A.D.'s documentation explains that the only software that has been found to be even partially incompatible with this ROM is Model III Superscript, but they furnish a patch for it to run normally. For those of you that have 4P's, you may have a personalized identification installed on a customized ROM for an additional fee of only \$10. This custom ID may have up to 92 characters such as your name, address, telephone number, social security number, and driver's license number.

SUMMARY: The XROM, XDROM, 4P-ROM is the most valuable modification you can install on your Model 4 if you have a hard disk. For approximately \$30 or so, you can sit back and relax and let the thing do it for you! As soon as I finish typing this review, I'm ordering an XDROM for my gate-array Model 4.*

Imagine my surprise, when I received in the mail a letter from M.A.D. software only a few days after mailing them my order for another XROM for my gate-array machine! I had sent them a copy of the review I wrote (* the preceding paragraphs) along with the order, and they responded instantly with the answer to my question about my inability to get the special characters from the keyboard using the <CTRL> key. Allow me to quote their response:

"We suspect the problem you are having with the new keyboard driver is caused by a misunderstanding of how to use it. The keyboard driver in the ROM (ours or the original) is only used when the machine is running in Model III mode. So TRSDOS 1.3, ROM BASIC, LDOS 5 and other Model

III-mode operating systems are the only places where you will see a difference. All Model 4 operating systems provide their own drivers, and you will not see a change in those environments.

"If you are using LDOS 5, the ROM keyboard driver is used unless you load the LDOS keyboard driver with the command SET *KI KI. This overrides the ROM keyboard driver, and the improvements are no longer available.

"To test the keyboard driver changes, hold down <BREAK>, press RESET and go into ROM BASIC. At the READY prompt, hold down <CTRL> and press any of the keys noted in the documentation. The characters listed will be produced.

"We hope this explains the situation you have noted. If this does explain the problem, you may want to update your review.

"One other comment about your review. You state 'When you initially order the ROM, you should order it with the software, HBUILD6.' To us, it seems that you are suggesting that a person should just buy ROMs for additional machines and use the same copy of HBUILD6 to initialize these machines. This is not correct. The license agreement for HBUILD6 allows it to be used on a single CPU only.

"The ability to order individual ROMs was intended only for persons who wanted the other features of the ROM and did not own a hard disk. Since we want to keep the prices down, we ask that your article respects this policy. If this was not your intent, our apologies, but we are sure you can see how this statement could be mis-interpreted."

Indeed, I stand corrected! In fact, I have egg on my face! I know full well that the Model 4 operating systems have their own keyboard drivers, and that the ROM keyboard driver is not used in the Model 4 mode. I just wasn't thinking straight. Sure enough, the XROM will provide all the special characters right from the keyboard IN THE MODEL III MODE using the <CTRL> key just as M.A.D. says it will!

As to the ordering of the individual

XROM's: be certain to order the PACKAGE of HBUILD6 with the appropriate ROM for each Model 4/hard disk set-up you intend to utilize this superior soft/hardware on. I have inquired about a site license for the HBUILD6, and I feel certain this would be available. I am currently running 5 Model 4's of which 2 have hard disks. I'll let you know what their response is to this request. They have certainly demonstrated (to me, at least) superior bug-free products and a desire to support them.

In summary, I AM SOLD! If you are running a Model 4 with a hard disk, and you don't have HBUILD6/XROM, then don't buy another thing for your system until you get your first order off to:

M.A.D. Software, P.O. Box 331323,
Ft.Worth, TX 76163

Have a great forever, -Art McAninch

(Editors Note: In the index listing of our last issue we left out the Mc of Art's last name - sorry Art. Also, there were several periods in the listing that the conversion to print program turned into Mexican jumping beans. So, if you are not into programming that much, get our disk number 10 which will have all the patches in Art's original form, already typed in correctly and ready to use. The errors are CN80 and not that of the author. -Ed.)

PRO4P FOR PROFILE 4 PLUS by Charles Harris, MD

After reading the review on Ultima it is not clear whether or not there is a FORMS module, one that will permit letters and other types of forms to be designed and which will pick up fields from the various records. (Not to be confused with the Forms Filter which is a Model 4 utility, that Blumenthal complains about).

From the review I gather that Ultima has more math facility than does Profile 4.

Profile 4 Plus is quite an excellent data base, easy to program with, easy to use and

quite immediately handy for numerous small data base chores, such as mail lists and so forth that people can use daily.

However, Small Computer got busy with MSDOS soon after they published Profile 4 Plus, and never got around to writing a module that would allow the user to create "forms" that could be merged with the data.

Towards this end, Clay Watts (68C North Loop Cedar Hill Texas 75104) came to the rescue with a neat Forms module called Pro4P that also is a look-up. In other words, if for example, you want a mail-merge, Profile and Pro4P will do the trick. Just use Profile to create the mail list, and then pull those fields simply into the form letter that Pro4P allows you to write. You can also, by measuring 10 or 12 cpi and 6 lines to the inch, place fields into prearranged forms.

The Forms module is written in Basic, and the documentation is quite explicit. Furthermore, Watts is courteous and helpful in providing a backup service by phone if help is needed.

The program is menu driven. It opens the files of Profile to extract fields that will be used by the form you are preparing. It also can create a composite of two data base files as long as they each provide a key file in common.

The original program had one module, but an update provides two modules, one for printing, which can be accessed from each other. To work it the file Pro4P is loaded into basic and run. A menu with a number of options, including one that will eliminate unneeded files to increase memory, appears. The options permit you to create a file, print an existing screen, look-up and combine two data base files, increase memory and exit.

Profile 4 Plus is a wonderful stand-alone program, but with the addition of Watt's Pro4P it completes Profile, to make it one of the more powerful and satisfying programs in the Model 4 world.

-Charles Harris, MD

OPEN FORUM

=====

GRIPE LTR:

Recently a new subscriber who has been with us since March of this year sent us the following letter.

"The 'article' by Peter Ray on MegaMem in the August issue was a blatant promotion for several Anitek products yet it masqueraded as a news item. When you permitted words like 'FREE BONUS OFFER' and 'bargain' and 'only' to appear, you violated our trust that we are being given neutral information on new developments in the articles. Are you so busy that you can't edit these self serving releases."

-D. V. O. Sanford NC 27330

A: The News Items section of CN80 is where we print News Releases from anyone who wishes to submit them. There is a vast difference between an "article", "a third party review", or a "monthly column", and it is not our place to edit a news release, just as it is not our place to edit an advertisers ad. After all in this case there is in this issue two more news releases by Peter Ray, and it is important to our readers to have this information presented as soon as possible. Third party reviews may follow, that is, when someone volunteers one, or sends a letter telling if he likes the new product or not.

One other point to ponder, Peter Ray, like a handful of others, has chosen to continue his support to the TRS-80 community and CN80. He deserves our support in turn. We do not feel that there was any 'masquerade' intended as you state, the News Releases are clearly identified 'by Peter Ray (Anitek)' and we would assume that any reader would recognize them for what they were. Besides much more can be said about a product in a news release than can be said in an ad. If the author of the news release gets carried away about his own product it is understandable. But for us to edit — or not print them — then we have to say sorry. How say you - CN80 readers?

Our publication is open to all regardless of differences of opinion, CN80 is here to support, inform and hopefully to add to the enjoyment of your TRS-80 computing. -CN80

Q: The screen dump shown below is my attempt to shorten the tone sound under the new LS-DOS 6.3.1. It will not take and I think this was one of the great patches, listed in CN80 Vol 1 No. 6, pg. 13, from Paul Jaeger. Designed for LS-DOS 6.3.0, I have grown accustomed to it, using little beeps and chirps in my programs. Now they are really dragging out as blops. Can this patch be made to work with 6.3.1 ? I've tried both the new and the old password in the patch, to no avail.

*** FIX5/JCL ***

.This patch shortens the tone of the sound command.

.It comes from CN80 Vol 1 No. 6, pg. 13.

PATCH SYS0/SYS.SYSTEM6 (D10,83=00 00
00 00 00 00:F10,83=CB 24 CB 25 CB 21)

When applying the patch the results were:

Reading input

F10,83=CB 24 CB 25 21

FIND line mismatch

Job aborted

Another question is. My model 4 has an amber crt from Langley-St.Clair that I installed. The crt is about 6 yrs old, the computer about 7 yrs. The computer power supply was replaced about 5 yrs ago. I think I also remember that a "flyback"? transformer was one time hissing and was replaced. Two internal DD/DS drives were installed a year ago to replace single side drives. The problem in question - evident for at least 10 months, maybe a little more - is the brightness on the screen that will fluctuate, and the drives -do not- have to be operating. It will do it just sitting there not being touched. It will dip low and maybe stay for a minute or two before coming back in brightness, or flicker up and down, quickly. Sometimes if it stays dim for awhile I turn up the contrast (front pot left side-under) to just below where the rasters won't show, but I don't like doing that. I don't feel that the brightness (rear pot left side-under) is operating solidly, but I don't know if that is the problem or that my power supply or something else is bad. Any guesses?, they would be appreciated. I also have a fairly new 4P with the green screen. I would sure like an amber screen for the 4P. Do you know if they are available?. Thanks for your continued help and support.
-Dick Burwell, New Ipswich, NH

How about it folks, any answers or suggestions out there? All replies will be forwarded and published -CN80

LTR & A: In the May 1990 (Vol 3 No. 5) issue of CN80 there was a reply to W. M. of Sanford, N.C. from A. S. of Seattle, Wa. The subject was "Print Options" using Multiplan. Also in that same letter "A. S. " asked another question about the setup sub option of Print Options. Since no answer appeared in the June (Vol 3. No. 6) issue, I would like to add a little information about the use of Multiplan's little idiosyncrasies. Turning off the "recalc" option as described is right on target. It is the first thing I do everytime I call up MP. I might add a reminder that the "recalc" key is "!" (shift-1), which can be used for a one time recalculation of the spread sheet as you enter your data. As for the use of the "setup" sub option, there was a good article in the September '87 issue of "80 MICRO" on page 23. If you don't have it I will try to summarize it for you. I also have a RS DMP 200 printer. First you need to know your printer control codes. For the DMP 200 look on page 45 of your printer operation manual for appendix A. Under the column headed code, look for dec. 27 & 20, forget the hex numbers for now, and note this is the code for condensed printing. Now add 64 to each of those numbers, and it becomes 91 & 84. Look in the appendix of your computer manual and find the table of ASCII characters. Note that the character for ASCII code dec 91 is video display "[" which is key strokes (clear - coma) at the same time. Likewise code dec 84 is "T", (uppercase please note). Evidently Multiplan wants to know when a printer control code is coming and the way to tell it that is to send it ASCII code 94 which is "^" which you get by key strokes (clear - semicolon). This little "^" (no quotes) is needed preceding each ASCII control code number. So therefore to print a Multiplan sheet in condensed printing enter in the setup sub option " ^T ". No quotes or spaces. What is not obvious from the article in "80 MICRO" is that the controls can be stacked. For example the printer code 27 & 56 for the DMP changes the line spacing to 1/8". Going thru the same calculations as

before we wind up with the following, "[^x". Note lower case of x. So by putting " ^T[^x " in the Print Options setup: and going to Print Margins and setting left: 1, top: 1, print width: 132, print length: (whatever) and page length: 88 you can cram a lot more information on a single sheet of paper.

Now my question is does anybody have a patch that would change the default of "Options" recalc: to No, so I wouldn't always have to go through that routine everytime I want to use MP?

-R. A. C. Fairfax, VA.

Q: Could anyone tell me the status of Acce 13. I have written to the (assumed) distributors, but haven't gotten any response (as yet 7/3/90). Their address is Allen Gelder Software, Box 11721, Main Post Office, San Francisco, CA 94101.

I would very much like to know whether it is still being supported or whether it has been discontinued and (hopefully) released into the Public Domain.

(And what I would like most is the source, naturally.)

For those of you wondering what I am babbling on about, Acce 13 (short for: accelerator) is an intelligent compiler for Basic on the Model III. Intelligent in that it will fall back into Basic for those statements that it doesn't know. Thus usable with virtually any version or brand of Basic.

-H. V.P. Chelser Heights, Victoria, Australia

A: As usual if anyone can shed any light on the request all replies will be forwarded. The person who answered the the phone number we were given for Allen Gelder by calling information, said that the Software operation had been out of business for sometime. Well we tried! CN80

LTR: Sometime ago, a long time ago, I wrote to you to have a problem published in the Computer News 80 regarding our TRS-80 Model 4 computer. The problem was

due to DOS not accessing all the banks of memory.

You referred our problem to Mr. Peter Ray, (Anitek) who in turn contacted us. We did come to an agreement on the terms of the method of solving the problem. We sent in the mother board for his analysis and he was able to solve the problem. We would like to thank you and especially Mr. Peter Ray for the services.

If you wish we would greatly like to publish the above; maybe edit it; in the Computer News 80 to let all the readers know that it is still possible to get the required services to keep the TRS-80 computers up and running. Yours truly,
-M. A. Portal, ND

(This letter was published as it was received, un-edited.)

Q: In the last issue of CN80 I've read your laser-printer article. I found the part that deals with Allwrite and laser-printer most interesting because I have a problem and maybe it could be solved now.

I'm using a Star LC-10 printer (that's the NX-1000 in the USA) and Allwrite. I like Allwrite but it has one drawback: It doesn't allow me to do everything my printer can do. I've 'played' for sometime with a width-table to at least give me minimum proportional capabilities - but I'd like to have full-printer control via Allwrite's commands (and not with those 'cryptic' @SY-commands).

Because of this I have raised a question sometime ago on CIS' LDOS-Forum that asked if someone has dis-assembled Allwrite's printer-driver so it could be customized to work with the LC-10 or if one even has written a driver for that printer. I only got the question of another user who was interested in the same thing.

Ron Malo wrote me to install the Epson-printer-driver, but that won't solve the problem of proportional-printing and missing printer-codes.

My question: Do you know of anybody who

has written a custom-printer driver for Allwrite? At least the people who adapted it for a laser should be able to do it.
R. F. Ganderkesse, FR of Germany.

A: In this issue you will find that we now have custom drivers that support the dot matrix printers using their FX-80 Mode that will support proportional printing. These drivers are for SuperScript and Script Pro. The Allwrite package is for Laser printers. However, we are working on being able to supply a custom print code service. If you would send us a copy of your printer manual, (we need only the part that deals with print codes plus a \$5 service fee.) we will see if we can come up with a print driver for you. If we can we will quote a price for the program and deduct the \$5 service fee. Before everyone gets bent out of shape over the service fee, the service fee is to cover the cost of mailing copies to our programming staff, and for research, if you feel that the cost of having the print drive is too expensive to have one written, or the print driver can not be written to be compatible with your printer. -CN80

Q: Advice Requested. I took two Basic Language programs (one a ham radio contest logging program and one a morse code sending program) and combined them. In the last contest I actually made a bunch of contacts and ran out of memory. After checking, I found that only 3K of free memory existed by the time the program was ready for my first contact. Then I went thru it and combined as many lines as possible to eliminate the 5 bytes per line number. That helped very little. I then tried to break into the realtime and prep/print portions and use CHAIN MERGE ALL to reduce the amount of program in memory. Because the MERGE requires the program to be saved in ASCII, the realtime portion did not fit into memory after the first part had created the variables and had been over written. I have 128K and would like to know if anyone has a way to use the "second 64K" in realtime from BASIC.
-P. E. H. Long Beach, MS

Q: Recent issues deal with printer settings that are obtained by invoking a consecutive series of BASIC statements like LPRINT CHR\$(27)CHR\$(mm)CHR\$(nn) to secure certain special effects like double height and/or double width. On my Olivetti PR2300 Inkjet unit, I use both mm=39 and nn=14 to secure a 2X magnification on both height and width. In contrast, to secure the Micro-Sized 18 CPI ANSI characters I use mm=20 (nn is not required). My added interest at this time is how to "talk to my printer" in a language other than basic.

Since developing further expertise in the use of my Fortran-66 Compiler, obtained from Tandy, I would very much like to be able to address the PR2300 in some such manner as: write (2,10)X,Y,X,Z together with :10 Format (1x,4A4) to secure the double height/double width mode directly off the Fortran Program. Does any CN80 reader have any suggestions.

-R. M. Westmont, IL

LTR: Re: Eric Bagai's Book review; August 1990 issue. I certainly wish that Henry Blumenthal had a better sense of humor for perhaps then he could have appreciated Eric's "What I Did with My Trash". On today's market I feel it was worth the price and it brought back some nostalgic moments of how I got where I am today with my Model 4.

It was tongue-in-cheek to be sure but it was also on the mark even if old stuff!

I for one did not have my Model 4 back in 1980. I still use Superscripts because I cannot afford to redo all the good things that have been done with the disks I do have. Neither can I financially justify the need for a hard drive nor high resolution board but if I could....I would! But I still have a kind of love affair with my outdated equipment....And that is what I thought Eric had to say. How many other models have survived such a test of time?

I wish all of you Happy Computing with your TRS-80 and even though it may not be highly sophisticated....It is fun!

-H. H. San Gabriel, CA.

A: As we said there is room in CN80 for everyone's opinion. We are of the opinion to agree with Mr. Blumenthal's review. Mr. Bagai's book seems to be over priced in the relation to any real assistance to the user, but then again it may not be over priced for a book of humor. -Ed.

LTR: While many TRS-80 users are aware of LS-DOS and LDOS operating systems, I'm not sure that very many are aware of the MultiDos operating system. MultiDos is available for the Model III or the Model 4. It operates in Model III mode on the Model 4 but allows many Model 4 features including 80 x 24 and reverse video. The latest version of MultiDos is now compatible with the XLR8er. It works fine with my 20 meg hard drive XLR8er equipped Model 4D.

I use LDOS as my primary Model III mode operating system. But when I want to use certain programs or features I MultiDos. It is a welcome addition to my TRS-80 library. The support I received from Vern Hester and David Welsh has been excellent. I urge all Model III mode users to try out this DOS.

-J. G. G. Parkhill, PA

A: If you are interested in MultiDos Model III operating system, it has been around for a long time and is not a new program. Most users should recognize the name if they were around in the heyday of the Model III. For more information contact:

David Welsh
Alpha Bit Communications
Box 20067
Ferndale, MI 48220
Phone (313)581-2896

He is the supplier and author of Lazy Writer word processing program, and several others that have been reviewed in CN80. The last price we had for the MultiDos program was \$99.95 for the MultiDos 80/64 for the Model 4, and \$89.95 for the MultiDos for Model I and Model III.

We would also be happy to publish any articles on MultiDos' use if anyone would care to submit them. -CN80

VC2BC/BAS PROGRAM LISTING NUMBER ONE by David Goblen

```

10 '*****
20 'VC2BC/BAS:  CONVERT VISICALC FILES TO BUSY-CALC FORMAT
30 'COPYRIGHT (C) 1990 BY DAVID GOBLEN. ALL RIGHTS RESERVED
40 '*****
50 CLEAR:DEFINT A-Z:CLS:DIM HD(20),TK$(52)
60 PRINT STRING$(79,"=")
70 PRINT TAB(12)"VC2BC 1.0 -- Convert VisiCalc File to Busy-Calc Format"
80 PRINT TAB(12)"Copyright (c) 1990 by David Goblen. All rights reserved"
90 PRINT STRING$(79,"-")
100 PRINT"This program will convert a VisiCalc program, saved using the usual"
110 PRINT"/SS Storage Save command, to a format readable by Busy-Calc.":PRINT
120 PRINT"Enter the name of the VisiCalc file (it will default to a /VC
    extension"
130 PRINT"if none is provided) and convert its data to a file of the same name,"
140 PRINT"but with a /BC extension. The original file will not be altered."
150 PRINT"Usage of drive numbers is allowed."
160 PRINT STRING$(79,"=")
170 LINE INPUT"Enter VisiCalc file to convert: ";A$
180 IF A$=""THEN 170
190 FOR X=1 TO LEN(A$):B$=MID$(A$,X,1)
200 IF B$>="a"AND B$<="z"THEN MID$(A$,X,1)=CHR$(ASC(B$)-32)
210 NEXT X
220 DR$="":X=INSTR(A$,"."):IF X THEN DR$=MID$(A$,X):A$=LEFT$(A$,X-1)
230 EX$="":X=INSTR(A$,"/"):IF X THEN EX$=MID$(A$,X):A$=LEFT$(A$,X-1)
240 IF EX$=""THEN EX$="/VC"
250 SF$=A$+EX$+DR$:DF$=A$+"/BC"
260 ON ERROR GOTO 270:OPEN"I",1,SF$:GOTO 280
270 PRINT:PRINT"Error! "SF$" does not exit":PRINT:END
280 ON ERROR GOTO 0:IF DR$=""THEN DR$=":0"
290 A$="SOURCE FILE: "+SF$:B$=STRING$(LEN(A$),"*"):PRINT B$:PRINT A$:PRINT B$
300 PRINT"Place "DF$" onto which drive ("DR$" = default)? ";:
310 LINE INPUT A$:IF A$=""THEN 340
320 B$=LEFT$(A$,1):IF B$=":"THEN A$=MID$(A$,2)
330 A$=LEFT$(A$,1):IF A$<"0"OR A$>"7"THEN 300 ELSE DR$=":"+A$
340 DF$=DF$+DR$
350 'check Visicalc file for validity
360 LINE INPUT#1,A$:IF LEFT$(A$,1)<>">"THEN PRINT"Error! "SF$" is not a VisiCalc
    file!":END
370 PRINT:PRINT"Scanning "SF$"...":PRINT
380 LINE INPUT#1,A$:IF LEFT$(A$,2)<>"/G"THEN 380
390 'build BC header section
400 GD=0:FOR X=0 TO 20:READ HD(X):NEXT X:GOTO 430
410 DATA 0,0,8,0,2,0,0,2,4,9,78,8,20,0,0,0,0,0,240,37
420 LINE INPUT#1,A$:IF LEFT$(A$,2)<>"/G"THEN 550
430 B$=MID$(A$,3,1):A$=MID$(A$,4)
440 IF B$="O"THEN IF A$="R"THEN HD(0)=HD(0)+64 'GLOBAL ORDER OF RECALC
450 IF B$="C"THEN HD(9)=VAL(A$) 'GLOBAL COLUMN WIDTH
460 IF B$="R"THEN IF A$="M"THEN HD(0)=HD(0)+32 'GLOBAL RECALC PRIORITY
470 IF B$<>"F"THEN 420
480 B$=A$ 'PROCESS GLOBAL FORMATS
490 IF INSTR("DGR",B$)THEN 420 'IGNORE THESE
500 IF B$="I"THEN GD=GD+3:HD(0)=HD(0)+3 'INTEGER
510 IF B$="L"THEN GD=GD+32:HD(0)=HD(0)+128 'LEFT-ALIGN
520 IF B$="$"THEN GD=GD+1:HD(0)=HD(0)+1 'DOLLAR

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530 IF B$="*"THEN GD=GD+16          'GRAPH
540 GOTO 420
550 X=INSTR(A$,"/G"):IF X THEN A$=MID$(A$,X):GOTO 430
560 'now open VisiCalc file for "Business"
570 CLOSE 1:OPEN"I",1,SF$:MR=0:MC=MR
580 ON ERROR GOTO 590:OPEN"O",2,DF$:GOTO 600
590 PRINT"Error! Cannot open "DF$!":END
600 ON ERROR GOTO 0
610 FOR X=1 TO 52:READ A$:IF X<16 THEN TK$(X)=A$ ELSE TK$(X)="\"+A$:IF X>20 THEN
    TK$(X)=TK$(X)+"("
620 NEXT X:DATA +,-,*,/,^,%,<=,<>,<,>,>=,>,>,(,),...
630 DATA PI,ERROR,NA,TRUE,FALSE,ISERROR,ISNA,CCMT,RCMT,SGN,?,ABS,TAN,ATAN,SIN
640 DATA ASIN,COS,ACOS,INT,ROUND,LOG,LN,EXP,SQRT,SUM,AVERAGE,COUNT,MAX,MIN
650 DATA LOOKUP,ENTRY,TABLE,IF,AND,OR,NPV,CHOOSE
660 'now build header on busy-calc file
670 PRINT"Building "DF$" heading section...":PRINT
680 PRINT#2,CHR$(194);CHR$(195);
690 HD(2)=HD(10)\HD(9):HD(11)=HD(2)
700 FOR X=0 TO 20:PRINT#2,CHR$(HD(X));:NEXT X
710 'now process lines in VisiCalc file
720 PRINT"Processing coordinates:"
730 LINE INPUT#1,A$:IF LEFT$(A$,1)<>">"THEN 1450
740 GOSUB 930 'GET COORDINATE
750 GOSUB 810 'GET FORMAT
760 IF F<128 THEN PRINT#2,CHR$(F);A$;:GOTO 730 'is label
770 PRINT#2,CHR$(F);STRING$(8,0); 'set up for value
780 IF A$>""THEN GOSUB 1050:GOTO 780 'PROCESS FORMULA
790 PRINT#2,CHR$(0);:GOTO 730
800 'get format for data
810 IF LEFT$(A$,2)="/"THEN A$=MID$(A$,3):F=64+LEN(A$):RETURN ELSE F$=""
820 IF LEFT$(A$,2)<>" /F"THEN 840
830 F$=F$+MID$(A$,3,1):A$=MID$(A$,4):GOTO 820
840 IF LEFT$(A$,1)=CHR$(34)THEN A$=MID$(A$,2):F=LEN(A$):RETURN
850 IF F$=""THEN F=128+GD:RETURN ELSE F=128+64
860 FOR X=1 TO LEN(F$):B$=MID$(F$,X,1)
870 IF B$="I"THEN F=F+3
880 IF B$="$"THEN F=F+1
890 IF B$="L"THEN F=F+32
900 IF B$="*"THEN F=F+16
910 NEXT X:RETURN
920 'get current coordinate
930 X=INSTR(A$,":")
940 C$=LEFT$(A$,X-1):PRINT MID$(C$,2);CHR$(9);
950 A$=MID$(A$,X+1)
960 C=ASC(MID$(C$,2,1))-65 'get col value
970 C$=MID$(C$,3)
980 IF LEFT$(C$,1)<"A"THEN 1000
990 C=C*26+ASC(LEFT$(C$,1))-65:C$=MID$(C$,2)
1000 R=VAL(C$) 'get row value
1010 IF C>MC THEN MC=C
1020 IF R>MR THEN MR=R
1030 PRINT#2,CHR$(C);CHR$(R);:RETURN
1040 'process a token
1050 B$=LEFT$(A$,1)
1060 IF B$="@"THEN 1200
1070 B=INSTR("+-*/^%()",B$):IF B>6 THEN B=B+6

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1080 IF B THEN A$=MID$(A$,2):GOTO 1180
1090 X=0:Y=INSTR("<=>",B$):IF Y=0 THEN 1260
1100 X=INSTR("///<=>/<>/=>", "\""+LEFT$(A$,2))/3
1110 IF X THEN Y=0:A$=MID$(A$,3) ELSE A$=MID$(A$,2)
1120 IF Y=1 THEN B=9
1130 IF Y=2 THEN B=11
1140 IF Y=3 THEN B=12
1150 IF X=1 THEN B=7
1160 IF X=2 THEN B=8
1170 IF X=3 THEN B=10
1180 PRINT#2,CHR$(B+128);:RETURN
1190 'PROCESS TOKENS
1200 B$="\"+MID$(A$,2):B=16-1
1210 B=B+1:IF INSTR(B$,TK$(B))=0 THEN 1210
1220 A$=MID$(A$,LEN(TK$(B))+1)
1230 IF B>50 THEN B=17 'set @ERROR token if too high
1240 GOTO 1180
1250 'get a value
1260 IF B$="," THEN PRINT#2,B$;:A$=MID$(A$,2):RETURN
1270 IF B$="." AND LEFT$(A$,3)="..." THEN B=15:A$=MID$(A$,4):GOTO 1180
1280 IF B$>="A" AND B$<="Z" THEN 1380 ELSE C$=""
1290 B$=LEFT$(A$,1):IF (B$>"0" AND B$<="9") OR B$="." THEN
  C$=C$+B$:A$=MID$(A$,2):GOTO 1290
1300 V#=VAL(C$):X=INSTR(C$,"."):IF X THEN 1350
1310 IF V#<10 THEN PRINT#2,CHR$(CINT(V#)+16);:RETURN
1320 IF V#<256 THEN PRINT#2,CHR$(26);CHR$(CINT(V#));:RETURN
1330 IF V#<32768! THEN B=CINT(V#):PRINT#2,CHR$(27);CHR$(B AND
  255);CHR$(B\256);:RETURN
1340 'process floating point values and values > 32767
1350 B$=MKD$(V#):IF LEFT$(B$,4)=STRING$(4,0) THEN B$=MID$(B$,5):F=28 ELSE F=29
1360 PRINT#2,CHR$(F);B$;:RETURN
1370 'process coordinate values
1380 C=ASC(B$)-65:A$=MID$(A$,2)
1390 B$=LEFT$(A$,1):IF B$<"A" THEN 1410
1400 C=C*26+ASC(B$)-65:A$=MID$(A$,2)
1410 C=C+64:R=0
1420 B$=LEFT$(A$,1)
1430 IF B$>"0" AND B$<="9" THEN R=R*10+VAL(B$):A$=MID$(A$,2):GOTO 1420
1440 PRINT#2,CHR$(C);CHR$(R);:RETURN
1450 PRINT#2,CHR$(255):CLOSE 1,2:PRINT:PRINT"Conversion complete"
1460 X=MC\26:MC=MC-X*26:PRINT:PRINT:PRINT"Max Col name used was : ";
1470 IF X THEN PRINT CHR$(X+64); ELSE PRINT" ";
1480 PRINT CHR$(MC+65):PRINT"Max Row name used was : "MR:END

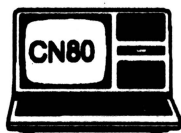
```

If you are writing programs to be published in CN80 please take the following into consideration. You should supply your basic program in the saved basic mode and also in the ASCII save on the same disk, along with a hard copy printout of the program listing. All 10 pitch printouts which are 80 columns wide are converted to 12 pitch, which does not have any effect on your program listing. Wrap around program lines should be avoided whenever possible.

TEST PATTERN FORMAT FOR 80 COLUMN TEXT PRINTED IN 12 PITCH

1234567890	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890
1	2	3	4	5	6	7	8

Write program listings so that if a line is over 80 characters, place the over-run on the next line with a new line number if possible. 7-1/4" line length is maximum in any pitch.



NEW ADDITIONS TO CN80'S FILE CABINET LIBRARY

Volume Disk Number	Description
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NEW ADDITIONS TO THE MODEL 4 CATALOG

MD4UTL59	This disk contains programs to manipulate your Profile 4 Plus data files.
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MD4BUS31	This disk contains Danny C. Mullens' Calendar programs.
MD4BUS32	This disk contains David P. Millers check writing program. READCHEK/DOC Authors program comment file. CHEX/DOC Program manual. CHEX/CMD Check writing program ACCOUNTS A blank master data file for CHEX/CMD
MD4EDU29	This disk contains programs to print out state maps with interesting information on them. It was written by Dale Hill and requires the Rembrandt program to print out the files. STATES/DOC The authors instruction file. Plus files for each individual state.

Volume Disk Number	Description
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MD4COM25	This disks contains the EZPACKET Ham radio files. EZPAC/DOC Packet radio program documentation. EZPAC80/CMD Easy Packet radio program. EZPACMAN/N1 Easy Packet radio manual printout program part 1. EZPACMAN/N2 Easy Packet radio manual printout program part 2. MORSE/BAS Basic program to teach Morse Code.
MD4COM26	This disk contains two communication programs. FASTERM/CMD Mel Patrick's latest version of his communication package Version 14.9 MULTICOM/CMD Communication program by James R. Reed, Ver 4.1.
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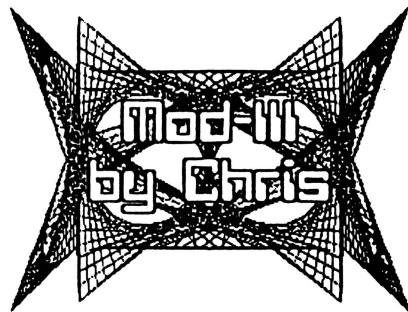
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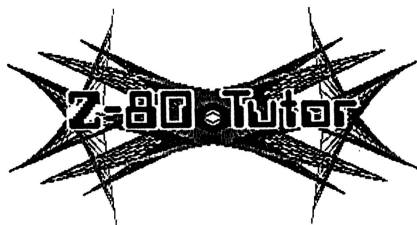
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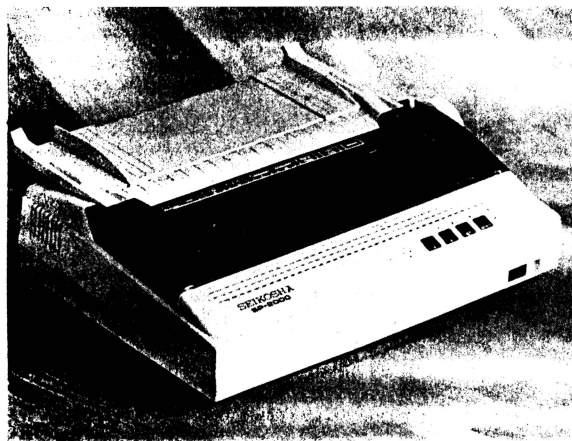
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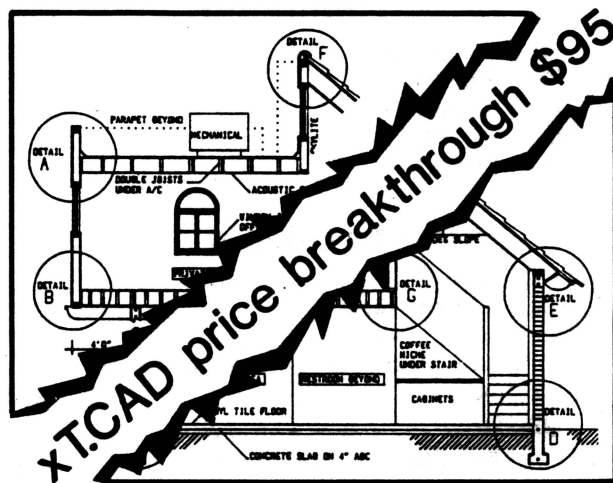
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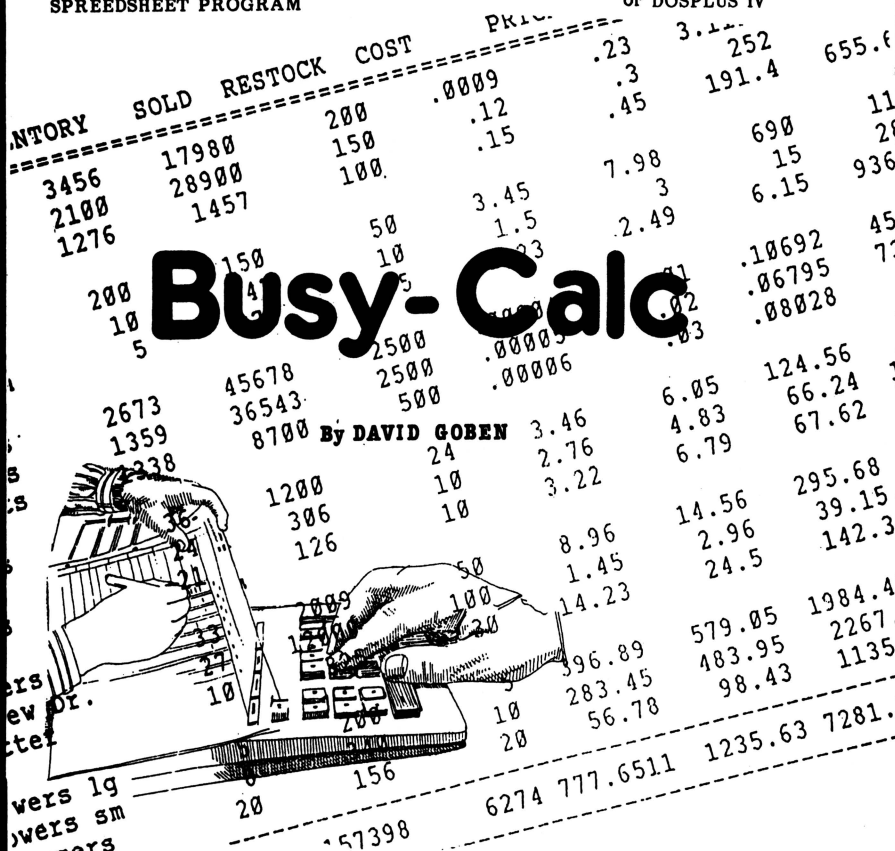
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for MODELS I/III/4

by David Goben

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Our LS-DOS 6.3.1 release has a little something for everyone



- ☆ The DATE command, "Date?" prompt on boot, and the @DATE SVC now support a date range of 32 years; from January 1, 1980 through December 31, 2011.
- ☆ Enable or disable the printer time-out and error generation with SYSTEM (PRTIME=ON|OFF)
- ☆ Customize the display of the time field in the DIR command to display 12-hr or 24-hr clock time with SYSTEM (AMPM=ON|OFF).
- ☆ Both ASCII and hexadecimal display output from the LIST command is **paged a screen at a time**. Or run it non-stop under your control.
- ☆ MEMORY displays (or prints) the status of switchable memory banks known to the DOS, as well as a **map of modules** resident in I/O driver system memory and high memory.
- ☆ Specify SYSTEM (DRIVE=d1,SWAP=d2) to **switch drive d1 for d2**. Either may be the system drive, and a Job Control Language file may be active on either of the swapped drives.
- ☆ The TED text editor now has commands to **print the entire text buffer**, or the contents of the first block encountered. Obtain directories from TED, too!
- ☆ Have extended memory **known to the DOS**? The SPOOL command now permits the BANK parameter entry to range from 0-30 instead of 0-7.
- ☆ Alter the logical record length of a file with "RESET filespec (LRL=n)"
- ☆ Specify "RESET filespec (DATE=OFF)" to restore a file's directory entry to the old-style dating of pre-6.3 release. Specify "RESET filespec (DATE=ON)" to establish a file's directory date as that of the **current system date and time**.
- ☆ Felt uncomfortable with the *alleged* protection scheme of 6.3? **LS-DOS 6.3.1 has no anti-piracy protection!** MISOSYS trusts its customers to honor our copyrights.
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Twenty megabyte drive packages are currently built with Kalok 3.5" hard drives; Forty megabyte packages use a Seagate ST251 28 millisecond drive. Drive packages are offered as 'pre-assembled kits'. Your 'kit' will be assembled to order and fully tested; all you will need to do is plug it in and install the software. Drive kits require a 50-pin SCSI to 50-pin edgecard host connecting cable (see price schedule).

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Hard Drive Specials until September 30th

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Mark Reed's Model 4 Utility Disk



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3. **MEMORY MAPPER.** Find out what has been installed in your computer's low and high memory regions.
4. **HIGH MEMORY RECLAMATION UTILITY.** Remove unused high memory filters and drivers. Free up more memory for your application programs.
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MARK REED'S MODEL 4 UTILITY DISK is fully supported by the author, and it is available now from *Computer News 80* for only \$14.95, plus \$2.00 for shipping and handling. Order your copy today!



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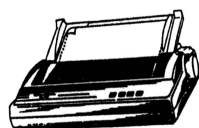
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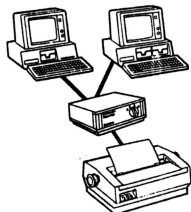
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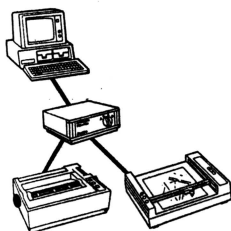
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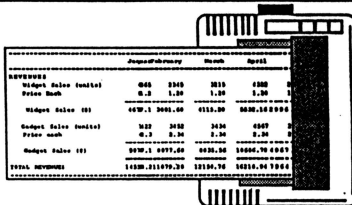
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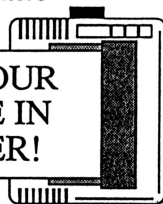


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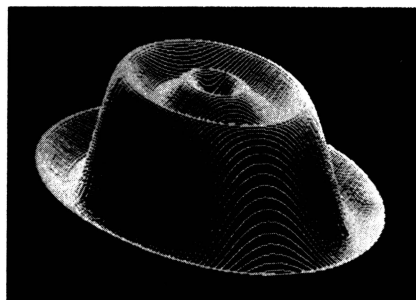
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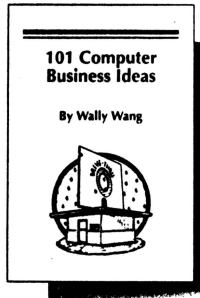
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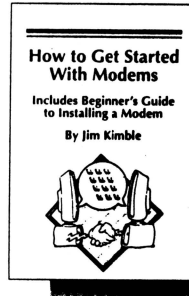
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Wally Wang is the author of numerous books on software and hardware, as well as the Co-Editor of *ComputerEdge*, San Diego's Computer Magazine, where he has a regular column and is a frequent contributor.

How to Get Started With Modems



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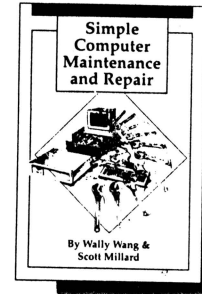
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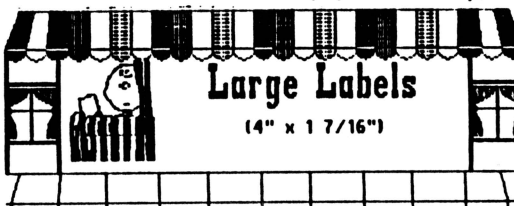
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EDITORIAL COMMENT

One glance at the index and you will see a real editor/publishers nightmare. How do we get all these great article contributions into the next issue or do we cut someone and hold the information for another month?

Because we know that you want and need the information and delays in getting it to you would really be unfair, we bit the bullet and put it all in - 64 pages worth of information that represents a lot of effort and many hours of dedicated work on the part of the authors. We owe these contributors a great debt of gratitude, we couldn't have done it with out them.

We are sorry that the Open Forum lost its space in this issue, but letters to the Open Forum will be in the issue next month.

And even if many of our readers don't really get to digest this issue until after their summer vacations and other summer chores are over, it will be a great start on the computing season that starts with the back-to-school month of September and for planning ahead to those long months of winter that are just around the corner again.

After reading all these great articles, the only thing the type setter heard for weeks was - Don't worry, be happy -PRINT IT!



NEWS ITEMS

=====

ALPHA PRODUCTS

Most of us were under the impression that Alpha Products was either out of business or had switched over to all MS equipment. Seems like we were wrong. They are still in business, and still selling products that are for the TRS-80 user, according to Kevin Tschudi of Alpha Products. But they have a new address from most of their ads that were run in 80 Micro. The last issue to carry their ad that we found was the 80 Micro # 97 (Feb. 1988) page 9, and in that issue they do have there new address listed which is:

Alpha Products
242 West Ave.
Darien CT 06820
Phone: 203-656-1806
800-221-0916

Some of the products that are still available for the TRS-80 are A-Bus which you can plug into your computer to build a custom system for control applications such as monitoring, automation, robotics, etc.

Their clock/calendar with battery backup for Time, Date, and Alarm settings, along with their voice synthesizer are still available. They also manufacture the "Smart Stepper Controller, Stepper Motor driver and stepper motors.

If you call Alpha Products, please tell them you saw it in CN80.

"MegaMem" The Ultimate Memory Expansion That Just Plugs In by Peter Ray (Anitek)

Now it is actually possible to increase the memory in your TRS-80 3/4/4D/4P to over 8 megabytes of internal RAM storage, by just plugging in one small board into your computer's Z80 CPU socket. That's 8 million bytes of RAM without any soldering, wiring, cutting or assembling of parts. In fact there is no change necessary to the mother board at all. Just plug the board in and you are off and running with up to 8 megabytes of

additional RAM memory.

If you love doing a lot of soldering of wires, cutting of board traces and trouble-shooting when you install extra memory in your computer, don't read this article, "MegaMem" is not for you. But if you have been waiting and hoping that someone would come out with a hassle-free way to add one or more megabytes of RAM to your computer without any work at all other than plugging in a simple little board, then read on, "MegaMem" is exactly what you have been waiting for.

This is how simple it is to install the "MegaMem" board. First, plug one or more 1-megabyte SIP memory modules into your "MegaMem" board. Next, open up your computer and remove the Z80 CPU chip from its socket and plug it into the socket on the MegaMem board. Then plug the "MegaMem" board into the Z80 socket and put the computer cover back on. That's all there is to it! No memory upgrade board has ever been easier to install than this.

The "MegaMem" board is incredibly small and compact, measuring only 3.5" x 5.4". This is only about half the size of a standard graphics board. But if you are wondering how a board so tiny could hold 8 megabytes of memory, the secret is the fact that "MegaMem" uses the newest state-of-the-art SIP memory modules, instead of bulky memory chips. These SIP modules are so advanced that they contain an entire megabyte of memory on a thin strip that measures only 3.5" x 0.5" x 0.2". One version of the MegaMem board is socketed to hold 8 of these SIP modules.

The "MegaMem" board comes in 4 different versions, each having the same circuitry but differing only in the number of sockets for memory modules. The 1-megabyte board for the Model 3 or 4 is available now during this special introductory offer for only \$129.95. The 3-megabyte board for the Model 3 or 4 is only \$149.95. The 6-megabyte board for the Model 4 is only \$179.95. And the 8-megabyte board for the Model 4 is only \$199.95. Custom built 10, 12, and 16 megabyte "MegaMem" boards are also available upon request if your special needs require it. Board prices do not include RAM. The 1-megabyte SIP memory modules are only \$125.00 each.

The "MegaMem" boards do not have to be fully populated to work. For example, the 8-megabyte "MegaMem" board can run with just one megabyte of RAM. So you can start out small (if you can call a million bytes small) and add more memory modules to your "MegaMem" board as your needs increase.

The "MegaMem" memory expansion can be used as a super high-speed, high-capacity RAM disk with the optional "MegaDrive" RAM disk software. "MegaDrive" can be used to create one or more RAM disks with the capacity of up to 13-megabytes each (if your "MegaMem" board has that much RAM on it). That's as much on-line data storage as 36 double-sided, double-density floppies or an entire 10-megabyte hard drive, and then some. The beauty is that, even though it operates just like a floppy drive or a hard drive, "MegaDrive" is lightning fast, since the files are all kept in internal RAM. File access from a "MegaDrive" is, in fact, about 10 times faster than a hard drive and about 50 times faster than a floppy drive. What this means to you is virtually unlimited file storage, with nearly instant loading and saving of even the most enormous files, and hours of your time saved every week, which means real dollars and cents back in your pocket. "MegaDrive" works on LS-DOS, LDOS, and TRSDOS 6, and is a bargain at only \$19.95.

The latest release of the LeScript word processing system (version 2.02) can also take advantage of the new "MegaMem" memory. LeScript 2.02 will automatically use as much as 4 megabytes of available "MegaMem" memory for holding its 70,000-word dictionary, its program overlays, and text files. LeScript 2.02 will also continue to use up to 1 megabyte of your HyperMem or SuperMem RAM if you have it installed, bringing the combined total to a whopping 5 megabytes text buffer. What this means to you is, if you have been running out of room trying to edit large documents, or wishing that you could have the dictionary resident in RAM for virtually instant spell checking, then your troubles are now over. The answer is as simple as a tiny plug-in "MegaMem" board and an update to LeScript 2.02. The LeScript 2.02 word processing system for the TRS-80 is only \$129.95. The version 2.02 update from 2.01 or 2.00 is only \$10,

from 1.8 is only \$45, from 1.7 is only \$65, from 1.6 is only \$75, and from 1.5 or earlier is only \$85.

The "MegaMem" board comes with a 30-day, no-worry, no-hassle, 100% customer satisfaction, money-back guarantee. Try "MegaMem" for 30 days. If you don't feel that "MegaMem" is one of the best purchases you have ever made, or if for any reason you decide to change your mind, just return it within 30 days in the same condition you received it, and your money will be quickly and cheerfully refunded, even the shipping charge, no questions asked.

Your own "MegaMem" board and the end to your memory shortage problems is only a phone call away. For more information on this incredible break-through in memory expansion, or to order your "MegaMem" board today, call Anitek Software Products at 1-407-259-9397. VISA and MasterCard orders taken over the phone. Or write us at PO Box 361136, Melbourne, FL 32936. These are special introductory prices and are only guaranteed through October 31, 1990. Please add \$4 shipping and handling for first item and \$2 for each additional item. Florida residents add 6% tax. LeScript updaters add \$3 if not returning your original serial-numbered master disk.

FREE BONUS OFFER: Order your "MegaMem" board before August 31, 1990 and mention that you read about it in CN80, and we'll give you the "MegaDrive" RAM disk software for FREE! That's right, a \$19.95 value for FREE, just for ordering before August 31, 1990.

In general, a "stock" Model 4 can run a fully populated 8 megabyte "MegaMem" board. The maximum RAM you may populate your "MegaMem" board with may be limited by factors unique to your computer, like placement and power consumption of other add-ons. If your computer has other add-ons we suggest you discuss it with us when you place your order.

-Peter Ray (Anitek)

MORE ON THE MODEL 100

by Charles Harris, MD

I have previously described the wonderful synergism between the Model 100 and Lazy Writer on Multidos.

Lazy Writer has a simple COMM program which lets you access files (and send files) to the Model 100 via a Null Modem. Only a few keystrokes are needed. Then LW formats the file for printing, which is important since the Model 100 text program does not format the program for printing. Files can be written on Multidos disks, and accessed by LSDOS into memory, then saved to LSDOS formatted disks and printed out with the Model 4 version of Lazy Writer. (The Multidos and Model 4 versions come on the same disk.)

So the TELCOM module of LW on Multidos can serve to access files from the Model 100 via Multidos to LS-DOS. Show me anything in the MSDOS world that is quite as versatile.

The Model 100 also is beneficiary of Super Rom by PCSG,, as well as another made by Traveling Software, which include a data base, an excellent spreadsheet, a thought processor and word processor. Each of these in themselves are powerful programs, and together they are a megaton of great programs. They make the Model 100 a self sufficient little computer, which is sturdy, and travels well. Extra memory is available for the Model 100. However, much of it is banked. Node turns out reasonably priced contiguous memory, but cannot be used with these aforementioned ROMS. But they are working on a software method of doing so. Cryptonics has banked memory which can access the Roms.

The model 100 is a great convenience, and has found a niche in various specialties that do not really require the power of a 386 chip.

-Charles Harris, MD



MOUSE ON YOUR MODEL 4 (WITHOUT AN INTERFACE) Part I

by David Goblen

Here is an idea that I have been playing with off and on for the past couple of years: using a mouse on my Model 4 (you Model III users hold on -- I'll soon have a driver for you!). I have been aware of a hardware interface that would allow the Color Computer Mouse to be used on the Model 4 (also called the Joystick Mouse; because it plugs into a joystick port on the CC or the Tandy 1000), but I wondered why one could not take advantage of the 25-pin RS-232-C jack on the bottom back of my Model 4D's, the back of my 4P, or on the bottom of my older Model 4? This was prompted to a great extent by the fact that the Logitech Serial Mouse I had been using on my MS-DOS system had a 25-pin jack, and the fact that it plugged into the Model 4's jacks so NICELY. My Genius Mouse ends in a 9-pin female plug, to which I attached a male-to-male 9-pin to 25-pin adapter from Radio Shack (\$7.95), so that it could be used with the serial card on my MS machine. So here I am with two mice that can plug into my Model 4's. One being a tempting spare. That did it. There -had- to be a way to do it.

After spending some time regrowing the hair I had been pulling out, I came across the MD4UTL51 disk from THE FILE CABINET. Aside from all the other nifty utilities on the disk, I found on it the MOUSE/CMD program, written by Scott McBurney. It was a program that supported a 2-button serial mouse. I quickly wrote a test program and tried it using a 2-button Tandy Serial Mouse I begged off from a friend. It worked, but it had some twitchy glitches in it. It was a barebones program, but it did provide me with some crucial information: the basic idea, though incomplete, of how a serial mouse talks to a serial port. Armed with this ammunition, I went to work.

What I wanted to do was write a driver that could support BOTH a 2-button and a 3-button serial mouse, report back to the user with -identical- results so that the program using it would not have to be configured to support the different type mouse devices, interface with the user using only a single SVC, and have the ability to

not only read and reset internal counters in the mouse driver, but also to change its sensitivity as well as alter how it reports relative ranges. Other nice features should include the ability to relocate itself into high memory, remove itself from high memory and recover its memory back to the system, and it should be able to install itself over the top of itself with new user parameters, so that the user could simply re-execute the program with new parameters to change them. Finally, I felt it important to give the user the ability to check the mouse parameters by getting a report from the current mouse driver.

Understanding that such an undertaking would be grueling and highly demanding, I quickly restocked my refrigerator with Diet Pepsi, charged my lamps with midnight oil, and went to work.

What I ended up with was a program that I am very proud of.

The program is called MOUSE/CMD. By default, if you simply entered MOUSE, it will configure itself for a 3-button serial mouse, have a sensitivity factor of zero (how sensitive it is to mouse motion), and report back with a horizontal (X) range from zero through 4095, and a vertical (Y) range from zero through 4095. To alter this configuration, you would use parameters enclosed in parenthesis (the closing parentheses is optional). If you use more than one parameter, they must be separated by a comma. Finally, if you entered MOUSE ? or used an invalid parameter, the program would provide you with a small help screen.

The usage syntax is MOUSE (parameters)

The optional parameters are:

REMOVE: This removes the mouse from the system. If there are no high memory routines located below it, in a lower memory area, it will return its memory space to the DOS, otherwise it will report that memory cannot be recovered (if you later decide to reinstall it, it has the ability to -re-use- its old space). Example: MOUSE (REMOVE).

B2: This option reconfigures the mouse driver for a 2-button serial mouse. Notice that 2-button and 3-button mice are

different enough that one configuration -will not- work with the other type mouse. Example: MOUSE (B2).

SENSE=n: This option sets the mouse movement sensitivity for a factor of zero through 3, with a default of zero. Zero is usually fast enough, but a higher factor means less actual mouse movement for a greater range report. Example: MOUSE (SENSE=2).

XSIZE=nn: where nn can be zero through 4094. By setting this to zero, the system defaults to reporting a range from zero through 4095, where the left side is zero and the right side is 4095. This options (and YSIZE) causes the mouse driver to apply a ratio to its movement report. Thus, if you used XSIZE=80, the mouse driver will give you the horizontal position from the left side of the screen in text cell columns. Example: MOUSE (XSIZE=80).

YSIZE=nn: where nn can be zero through 4094. By setting this to zero, the system defaults to reporting a range from zero through 4095, where zero is the top and 4095 is the bottom. This option works like XSIZE above, except that it reports its vertical location. Example: MOUSE (YSIZE=24).

QUERY: This option reports back to the user what the currently active mouse driver parameters are: button-count configuration, sensitivity, and X and Y sizing. Example: MOUSE (QUERY).

The importance of the XSIZE and YSIZE parameters are a great help to programmers, because this feature allows them to forget about factoring down the X and Y values and translate them into the appropriate screen coordinates. Thus, by using XSIZE=80, YSIZE=24, you can tell the driver to report back the actual text screen column and row values. It can as easily be adapted for graphics screens with the 160 by 72 screens, or hi-res screens with a 640 by 240 screen size.

Please be aware that you can abbreviate each parameter name to just their first character, thus REMOVE=R, B2=B, SENSE=S, XSIZE=X, YSIZE=Y, QUERY=Q.

LEARNING THE LINGO (Speaking "Mouse")

To understand the information which the mouse gives you, you must clear your mind of the conception that the mouse gives you hard data on its actual location on the screen. This is totally not true -- it just SEEMS that way. Basically what it gives you is data that -you- can superimpose onto the video screen. The mouse does not provide screen information; it simply provides how many "ticks" it has moved horizontally across the X-axis, and vertically across the Y-axis since their status was last read ("Ticks" are often called Mickies, as Microsoft calls them -- a standard mouse usually reports 200-250 Mickies per inch; MPI's). My mouse driver amasses this information into internal registers, limiting the Mickie count from zero through 4095. This is only a relative number, and can actually be any range the driver programmer chooses (Scott McBurney used 0 - 1023, if I recall). The job of the programmer that uses the driver is to translate this information as it relates to the screen, giving the user the illusion that the mouse is a part of your video display.

For a programmer to talk to the mouse, you must do so from the machine language level via SVC (SuperVisory Call) 120. This is a nice middle of the road number that will more than likely not be assigned even by user-created custom applications. You might notice that this is outside the 124-127 range as specified by the Technical Reference Manual. The method to my madness is what I assume to have also been Scott's -- I've run into too many application programs that use all the 124-127 SVC vectors (My XMEM program, found on DAVID'S MODEL 4 SYSTEM UTILITIES, available from CN80, uses SVC 125, for example). And besides, if MISOSYS ever decides to assign vectors up that high, without skipping any, it will probably be the day after the Model 4 dies.

The first thing your program must do is of course to ensure that the mouse driver is currently installed in memory and active. The Mouse Driver contains a standard device header, with a name called "\$MOUSE". Normally a person will use the @GTMOD SVC (83) to find this. But for me this is only a start, as it is not 100 % reliable. I say this because if a driver is installed in high memory, then another

driver is loaded beneath it, and -then- you remove the first driver, although it will be removed from the system, @GTMOD will still locate it within protected high memory (unless the de-installer fails to check to see if anything existed beneath it before pushing up high memory -- an invitation to a system crash). Because of this, a secondary method is to check SVC 120, our @MOUSE SVC, to see if it is linked into anything. A sample line of code follows that will detect these things:

```
@MOUSE EQU    120      ;@MOUSE SVC
@GTMOD EQU    83       ;Get memory module
@FLAGS EQU    101      ;System flags

TMOUSE LD      DE,@MOUSE
SVC          @GTMOD    ;found?
RET          NZ        ;error if not
SVC          @FLAGS    ;point to FLAG$
LD           H,(IY+26) ;point HL to
LD           L,@MOUSE*2 ;@MOUSE SVC vector
LD           E,(HL)    ;vector to DE
INC          HL
LD           D,(HL)
LD           A,(DE)    ;get 1st byte
CP           18H        ;installed?
RET          Z=installed

;-----
$MOUSE DB     '$MOUSE',0
```

You would use this subroutine by inserting it in your program, and executing it using CALL TMOUSE. If on return the Z flag is set, then the driver is active, otherwise a NZ condition indicates that it is not.

Version 1.0 of MOUSE/CMD currently supports 5 functions: Get button status and X/Y offsets, put new X/Y offsets, set sensitivity and X/Y sizing factors, read the current sensitivity and X/Y factors, and return the mouse type the driver is configured for. Following is a Technical Reference sheet for use by the machine language programmer:

@MOUSE SVC Number 120

Mouse Functions

Performs various functions related to the mouse interface. The B register is used to pass the function number.

ENTRY CONDITIONS:

A = 120 (X'78')

B selects one of the following functions:

If B = 1, return current mouse status and X/Y offsets.

If B = 2, set current X/Y offsets.

HL = X offset from zero. This value cannot exceed the currently defined XSIZE value.

DE = Y offset from zero. This value cannot exceed the currently defined YSIZE value.

If B = 3, get current sensitivity factor and currently defined XSIZE and YSIZE values.

IF B = 4, set the sensitivity factor, XSIZE, and YSIZE.

C = Mouse motion sensitivity factor (0-3).

HL = Maximum limit for X range (0 - 4094).

DE = Maximum limit for Y range (0 - 4094).

If B = 5, get current mouse type the driver is configured for.

EXIT CONDITIONS:

If B = 1:

Success always.

AF, BC, DE, and HL altered.

A = button status.

Bit 2 reset: left button pressed.

Bit 1 reset: middle button pressed.

Bit 0 reset: right button pressed.

HL = X value (0 - XSIZE).

DE = Y value (0 - YSIZE).

If B = 2:

Success, Z flag set.

AF, BC, DE, and HL altered.

A = mouse type (see function 5).

HL = actual X offset (0 - 4095).

DE = actual Y offset (0 - 4095).

Failure, NZ flag set.

A = error number.

If B = 3:

Success always.

AF, BC, DE, and HL altered.

A = sensitivity factor (0 - 2).

HL = Current XSIZE value.

DE = Current YSIZE value.

If B = 4:

Success, Z flag set.

AF, BC, DE, and HL altered.

Failure, NZ flag set.

A = error number.

If B = 5:

Success always.

A = 1 if 3-button mouse.

A = 0 if 2-button mouse.

GENERAL:

On a 2-button mouse, if both left and right buttons are pressed at the same time, then the driver simulates pressing the middle button of a 3-button mouse. XSIZE and YSIZE refer to "relative" limits from zero for the horizontal (X) axis and the vertical (Y) axis.

CONCLUSION

In the second part of this article, I will outline the actual communications with the mouse at the hardware and software levels, including some information I have yet to see published elsewhere. If you are a good programmer, you could probably write your own driver from the information I will provide. I will also outline programming examples, and show you how to access the driver from BASIC. -Hopefully- by then I'll have the Model III version driver ready. Since I'm going on vacation while this is being published, I hope I'll have time enough to announce it with my next article. Regardless, the communications will be basically the same, except that you will be using a CALL rather than a SVC.

Considering the amount of work I've put into this, hopefully we will soon begin to see application programs being written to take full advantage of it.

As a final note, if you have never used a mouse before, you are in for a day at the firing range, because using a mouse takes more skill than what you might think, especially on things that require exacting precision. For example, to run the mouse in a perfect horizontal or vertical line takes a -lot- of skill. Most people hold their mouse in such a way that the pointer will often track off to one side. This is usually due to the user holding the mouse at a slight angle, and trying to track it out of alignment with its N-S-E-W poles. In most applications, this is not important, so there is no need for sweat on the brow. But you might try becoming proficient at it using MS2/CMD on the mouse disk. It displays a non-destructive mouse pointer on the screen. You can hold one of the mouse

buttons down to practice drawing lines.
You'll see what I mean.

So until next time, HAPPY COMPUTING!
-David Goben

HOW TO ORDER THE CN80 MOUSE DRIVER FOR MODEL 4.

The MOUSE/CMD program and 2 other programs, MTEST1/CMD and MTEST2/CMD (plus their assembly source code), to test the mouse, is available on a disk from Computer News 80, and will not be placed in the CN80 disk series collection or the File Cabinet, as it is not a public domain program.

To order the CN80 MOUSE DRIVER FOR MODEL 4 send \$5.00 for orders delivered in the US. Orders mailed to Canada and all other countries send \$6.00. Prices include shipping and handling.

FILE CABINET UPDATE A CN80 Staff report.

In the section following program listings you will find a listing of the new files that have been added to the File Cabinet Catalogs. There are several new items that are now available to you. And a new section to the File Cabinet called the PostMaster Icon Library, in this section you will find 15 disks of icons that can be used directly by David Miller's PostMaster program, without anything to do on your part to make the icons compatible with the PostMaster program. Just make a backup to give yourself a working disk copy, and use the program to load the icons. (See review of PostMaster in this issue.)

Each disk contains four to seven separate files, each containing 30 icons. At present there are a total of 61 files of icons, that's 1,830 icon pictures, plus additional border files. If this is not enough more will be added in time. But you can use the program to build your own icons if you so desire.

Ken Gordon has sent us a disk of "real" bagpipe music for inclusion in the Orch90

catalog.

Plus there are new additions to the Model 4 Utility Catalog, the Model 4 Business, Education and Games catalogs.

Check out the listing for more details of each program.

The File Cabinet price structure remains the same.

1 to 10 disk volumes	\$ 4.00 each.
11 to 20 disk volumes	\$ 3.75 each.
21 to 40 disk volumes	\$ 3.50 each.
41 to 60 disk volumes	\$ 3.25 each.
61 or more	\$ 3.00 each.

If you supply your own disks the fee for copying is \$2.75 each. Supply your disks with labels attached. No return label or container is needed and you do not need to format your disks.

Postage and handling in addition to the disk volume charges are the same if you supply your own disks or we supply the disks.

1 to 10 disk volumes	\$ 2.00
11 to 20 disk volumes	\$ 2.50
21 to 40 disk volumes	\$ 3.50
41 to 60 disk volumes	\$ 4.00
61 or more volumes	\$ 5.00

For orders shipped into Canada or other countries add an additional \$2.00 per order to cover the additional postage costs.

All Catalogs on a disk are still \$ 2.00 each, nonrefundable, but you get a free disk of your choice with your first order.

If you don't have your catalog yet order one for your computer, you will find thousand of programs to choose from.

REMINDER

If the last two digits on your label are 90/08 it is time to renew your subscription because this is your last issue. Don't take a chance and miss all the great things that are coming in the next issue.

String searches

Finding a "string" of characters in some text is a fairly simple matter. The "text" might be a word processor file or a data base, or perhaps an area in memory where we want to find some particular pattern of bytes. The CPIR, CPDR, CPI and CPD instructions discussed last month in connection with our MENU scheme, are often used in such routines. But if the string has more than one character then the procedure is a little more complicated than a single-key menu. Even if the "lead" (first) character of the string is found, we must further compare its other characters. Of course the "lead" character must be found in the text to begin with, otherwise there is no point in searching for the rest of the string.

We need two buffers somewhere in the program. The HOLD buffer holds a string we want to find. This could be an input buffer where we type some string and press 'enter' which puts a terminating "carriage return" at the end of the string. The second buffer TEXT also will have a terminator. The terminators in both buffers can be the same. We only must make sure that both terminators are unique characters not used elsewhere in the string. In practical applications the text buffer is often

terminated by an "end-of-file" byte 26 (control-Z). But for now assume that our buffers look like this:

```
;-----
HOLD:  DEFM 'NEWS'      ;string
       DEFB 13          ;terminator
;-----
```

```
TEXT:  DEFM 'COMPUTER NEWS 80'
EOTX:  DEFB 13          ;end of text
;-----
```

We want to find the location of the string 'NEWS' in the text. Let's see how this might work.

```
;-----
FIND:  LD    HL,TEXT    ;start of text
       LD    BC,EOTX-TEXT+1 ;length
       LD    DE,HOLD    ;string buffer
TRY:   LD    A,(DE)      ;lead character
       CPIR
       RET    PO         ;no more text
       PUSH  DE          ;save info
       PUSH  HL
MORE:  INC   DE          ;try next
       LD    A,(DE)
       CP    13          ;end string?
       JR    Z,STOP      ;yes
       CP    (HL)        ;else match?
       INC   HL          ;point next
       JR    Z,MORE       ;so far so good
STOP:  POP   HL
       POP   DE
       JR    NZ,TRY       ;no good
       RET              ;string found;
;-----
```

At the beginning of the routine we load HL with the starting address of the TEXT buffer and BC with its length, including its terminator (that's why we add "one" in the operand expression EOTX-TEXT+1). The register pair DE is loaded with the starting address of the string buffer HOLD. At the label TRY we start an "outer" loop which scans the text for the leading character of the string. We copy that character to register A and let CPIR do the job. As you remember, the CPIR instruction stops the scan if a match is found, or if the entire block has been scanned.

If CPIR stopped because the entire block has been scanned then the Parity flag is reset (PO Parity Odd). The last character in the block is our EOTX terminator and we know for sure it can't be a match for the leading character of the string (because we defined it that way, as discussed above). Therefore we don't need to bother checking the Z-flag like we did in the MENU routine



last month. Obviously Z-flag is reset NZ at this moment (it could only be set if the last character were a match). The routine returns and the status of Z-flag will be used by the calling program to decide what to do next.

Otherwise we have a match for the lead character. Since it can't possibly be the end of the "text", the Parity flag remains set and RET PO is skipped. We save DE and HL for a while, because we will need them again, and start an "inner" loop at the label MORE to evaluate the remaining characters of the string. On the initial entry to this loop DE still points to the lead character of the string, so we increment it to check the second character. This second character might be actually the terminator of the string (if the string is only one byte long). In any case we immediately compare it with "carriage return" byte 13 (or whatever the terminator we are using) and if it's a match then we know that all characters in the string have been successfully compared. So we jump to STOP (more about it in a moment).

If the character in the string is not its terminator, then we compare it with the corresponding byte in TEXT. As you remember, after CPIR the register pair HL always points to that byte in TEXT which follows the byte on which CPIR stopped. So we don't need to increment HL before CP (HL). But after the comparison we increment HL just in case there will be more to compare. Then we check the Z-flag (which, as you recall, is not affected by incrementing a register pair). As long as it's set Z we know that the second, third, etc, characters are matching, and loop to MORE, keep incrementing the string pointer DE and the text pointer HL, until we hit the string terminator (all characters match) and jump out of the loop to STOP, or until Z-flag is reset at the end of the loop (we hit a non-matching character) in which case we simply "fall-through" to STOP.

At STOP we immediately POP the previously saved registers. If we "fell-through" from the loop then the Z-flag is still reset (string not found) and we go back to the "outer" loop at TRY to continue the CPIR scan. We can do that because we didn't touch the register BC, so it still holds the count of bytes remaining

to be scanned by CPIR. Similarly we preserved HL so that CPIR can resume the scan right where it stopped. And at the beginning of TRY we can quickly reload A with the lead character of the string, because DE has also preserved the address of the string.

If we jumped out of the "inner" loop to STOP then Z-flag was set, JR NZ,TRY is ignored, and the routine returns. The calling program knows that the search has been successful, because otherwise Z-flag would be reset. The other important piece of information returned to the calling program is contained in HL. At this moment it points to a byte right after the location where the string has been found. It can be simply DECREMENTED to point to the actual beginning of the matching segment of TEXT. Depending on the purpose of the calling program, this can be now used to display that portion of the text we were after, position the cursor in the text where the match has been found, or whatever. For example, using our buffers shown at the beginning of this essay, a fragment of the calling program might look like this (Mod-4 use SVC 10 instead of CALL 539):

```

;-----
CALL FIND
JP    NZ,ERROR ;not found
DEC   HL       ;adjust pointer
CALL  539      ;display
;-----

```

If the FIND routine returns with the Z-flag reset NZ then we jump to some error processing routine elsewhere in the program. Otherwise we adjust the pointer in the TEXT as noted above, and the ROM/DOS call displays that portion of TEXT where the string 'NEWS' has been found, up to the terminating "carriage return"

NEWS 80

Remember that on a successful return from FIND the registers HL, DE and BC still contain all the information needed to resume the TRY loop. Before doing anything else with those registers we might want to preserve them with PUSH and POP, and repeatedly CALL TRY until a NZ-return, to search for any additional occurrences of the same string in the same text.

A complete stand-alone program to test today's procedure could incorporate all the above bits and pieces, plus an initial routine

to input a string. In Mod-4 replace the CALL 539 by SVC 10 (CN80 8/89:8, Z80 Tutor I:7) and CALL 64 by SVC 9 (CN80 12/89:3, Z80 Tutor I:32).

```

;-----
      ORG 64000
RUN:  LD HL,ASK      ;prompt
      CALL 539       ;display
      LD HL,HOLD     ;buffer
      LD B,16        ;max 16 char
      CALL 64        ;input string
      RET C          ;quit on break
      CALL FIND
      JP NZ,ERROR    ;not found
      DEC HL         ;adjust pointer
      CALL 539       ;display
ERROR: JR RUN
;-----
FIND:  ... subroutine goes here
;-----
ASK:   DEFM 'Enter string >'
      DEFB 3         ;end prompt
HOLD:  DEFS 17        ;for string
TEXT:  DEFM 'COMPUTER NEWS 80'
EOTX:  DEFB 13        ;terminator
;-----
      END RUN
;-----

```

To simplify this example, the ERROR "routine" is the same as the normal jump to the prompt. On prompt press 'break' to exit to DOS. The HOLD buffer is designed to hold an input string up to 16 characters long plus the terminating carriage return (which will be inserted by the ROM/DOS call). You could run it from DOS and play to see how the procedure works. For example on prompt enter

E
and the display will show
ER NEWS 80
because that's where the first match for 'E' is found. Then enter

EW
and the display shows
EWS 80

because although the first letter in the search string is also 'E', the second letter forces the search to the next occurrence of 'E' in TEXT. And if you enter lowercase

e
then nothing will be found, because our procedure is "case sensitive" and only exact matches are found. Routines similar to our CAP or DECAP (CN90 1/90:7, Z80 Tutor I:35) could be added to ignore the difference between upper and lower case. It would depend on the purpose of each

program. But that's about all there is to string searches: the CPIR scan pinpoints the first matching character, and then an "inner" loop verifies the rest.

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REMBRANDT AND THE USA by Dale Hill

So you've inherited a couple of old Model 4's for your classroom while the rest of the school gets new IBMs with the new bond issue. Your a bit bitter, but you wonder what you can do with them. Well, that's what I set out to do with my trusty ol' copy of Rembrandt and some late night time.

A basic rule of thumb in school teaching is, if it takes the kids less time to finish it than it took for you to prepare for it, it's not worth doing. With computers, you can hang that adage out to dry. Yes, it takes a while to do a good job with Rembrandt graphics, but remember, once you saved it, its saved, and you can use it over and over, expand on it and alter it for later use.

My kids always study the United States and so does everyone else's kids. Why not use Rembrandt for display of all the states with capitals and major cities? Sounded good so that is what I set out to do. Now remember I am no cartographer nor am I an artist. I cannot draw an adequate circle, and some of the states are not perfectly proportional, nor are they exactly right, but, if you ask me, they turned out pretty good.

One picture using the Board/Cmd of Rembrandt takes up 3k of diskette space. Quickly you can see that all 50 states will take up 150k with 30k left to play around with. With a title screen, an informational screen, and maybe one other screen, that leaves 21K left for command files. As the task begin, my efforts grew and grew. More on that later.

With a 128K machine, I set up a memdisk as

a drive 2 and put Allwrite on it as well as the Change/CMD which comes with Rembrandt. Using Ted to edit the command files became a bit burdensome, and as I mentioned above, my efforts to reproduce the states on screen grew beyond just a simple state display with region displays, coastal displays, border displays, etc. I also set up question screens for each state that can be displayed before the state and can be edited for individual preference. Thus Allwrite eased the process of editing and helped write those Question Displays.

Using the Change/CMD I did find a glitch in Rembrandt. Writing the Questions, I would CHANGE the screen to a Rembrandt format. If I had a file called TEXQ:2 on my memdisk, and I wanted to CHANGE it to TEXQ:1 into a Rembrandt format, the screen would freeze. I had to reset and actually rename the entire file to get it to work. Thus, my Allwrite question file was TEXQ:2 while my Rembrandt file became TEX/qst:1.

I found the Rembrandt screen editing commands for the Board/Cmd quite adequate for most states. Of course, tiny curves were difficult, but since graphics with Rembrandt are low resolution, fine tuning is not possible. I do wish that there was a way the default drawing commands could be changed since it gets a bit old, after exiting Rembrandt, to set up all of your commands again they way you want.

On a 64k machine with 2 drives, setting up the 50 states with questions, becomes almost impossible. The Brief Command has to be on one drive with system files as well as 300K minimum of screens plus the command files. The command files I set up with little razzle-dazzle such that a black screen would close and open them from bottom up or top down as quickly as possible and showing the state about 10 seconds.

Black,1,0
Idaho,1,3
Black,1,0
Illin,1,3
Black,1,0
Iowa,1,3

A 99 to replace the 3 will force the operator to press a key to go on. With my

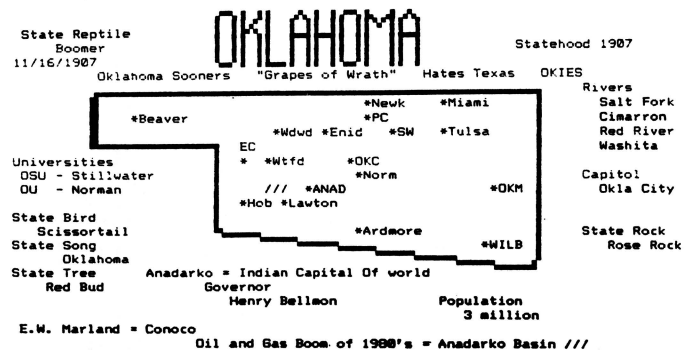
question files, that is the way I set all of them up, replacing the Black file with my question file and putting 99 on both the state and the question command line. Remember, command files have to be in pure ASCII. I also included a TOUCH screen that tells the user to "Touch the screen to go on" and ended my command file with REPEAT so that the display automatically goes back to the touch screen, ready for the next reader. Pretty snazzy if I do say so myself.

There is plenty of room for the teacher to add different things on the state screens using the Board/CMD. Just make a copy of the original pictures diskette and edit the individual pictures. I am enclosing the entire display on single sided diskette to CN80 to distribute as they please if they think it worthwhile. If anyone is interested in my question screens and other files, send me 8 bucks for 2 diskettes or 4 bucks for one double sided diskette, and I will send them to you. I have the states displayed in regions such as the Midwest, Southeast, Eastern Seaboard, etc.

Yes, Rembrandt is time consuming but well worth it. No, it is not MacIntosh Hypercard, but with a little ingenuity, you can use your Model 4 with Rembrandt for all kinds of educational screens!!

Now, I am going to seriously set down to that Rembrandt Remedial Reading Machine that I have been thinking about! Let me know if you are interested.

-Dale Hill



A VISIT WITH DAVID GOBEN

by David Goben

This month we begin doing some more functional things on our laser printers. I understand some of the "big wigs" in laser printer support will soon be presenting material in CN80. But simply because everything seems to be "going laser", rest assured that soon I will begin my focus on the FX-80 mode that comes standard on the ALPS, Panasonic, and Tandy laser printers (among others). The nice thing about this change is that those of you using dot matrix printers, such as the Epsoms, will be right at home, since the FX-80 mode on the laser printers is just like using a normal dot-matrix printer.

But again, before we get started, let's clear some fog:

UNDOCUMENTED MODEL 4 FEATURES

I hate undocumented features. But I had no sooner got the word out about the undocumented feature in TRSDOS 1.3 (resetting scroll protect when it goes to TRSDOS Ready), then Model 4 users were writing and calling, demanding why I had never presented and undocumented features on the Model 4. Its like they think I know everything (I -DON'T-!). I'm just a schmoe who likes to understand how what he uses works, that's all. Sometimes I can't figure out how to turn a door knob.

Anyway, recently I was (as usual) pulling my hair out (and at 35, my hair doesn't seem to need much help from my hands anymore), trying to figure out how to test for the control key. The problem was that even though an image of the keyboard is stored near the start of the system keyboard driver (\$KI), 16 bytes from the start of the driver, stored as 8 consecutive bytes for the keyboard matrix rows 0 through 7, "they" stripped out the CTRL key bit from the 7th byte, bit 2 (!arg!, as it were). Having read THE SOURCE more often than the daily paper, I had for some time been aware of the ability to send a control code of 255 through the @CTL SVC to the keyboard driver and obtaining a copy of this matrix (with the CTRL key code intact). Normally I use this method, but I wanted to do it in an -easier- fashion. When requested for such information, I simply provided this undocumented @CTL data to anyone who

wanted to be able to "peek" at the keyboard, like they could on the Model I and III. It is important enough that I will now share it here with you. In machine language terms, this is a simple procedure. Following is a sample subroutine you could call using the DEA Disk Editor/Assembler:

```

;-----
# pick up an image of the keyboard.
On exit, register IY point to the
Start of an 8-byte buffer which
# contains the current keyboard image.

@GET_KEYBOARD:
    DB 11H,'KI' ;Load DE with "KI"
    SVC 82 ;@GTDCB
    EX DE,HL ;driver addr to DE
    LD IY,$KEYBUF$ ;point to buffer
    LD C,255 ;CONTROL 255 funct
    SVC 5 ;@CTL
    RET ;retur0 to caller
;-----
$KEYBUF$: DS 8 ;keyboard buffer
;-----

```

To use this routine, simply use CALL @GET_KEYBOARD in your program. Then, of course, you have to figure out how the keyboard matrix is configured. This you can get from the following table:

BITS-->	0	1	2	3	4	5	6	7
IY+0	0	A	B	C	D	E	F	G
IY+1	H	I	J	K	L	M	N	O
IY+2	P	Q	R	S	T	U	V	W
IY+3	X	Y	Z					
IY+4	0	1	2	3	4	5	6	7
IY+5	8	9	:	*	+	<	=	.
IY+6	ENT	CLR	BRK	UP	DOWN	LFT	RGT	SPC
IY+7	LSH	RSH	CTL	CAP	F1	F2	F3	

As you can see, the matrix is pretty straight forward. You can test for a key by testing its associated bit in the table. For example, if we wanted to test and see if the CTRL key was pressed, by referring to the table we see that this is located under bit 2 at IY+7. So if we wanted to test for the "B" key being pressed, we would use the instruction BIT 2,(IY+0), the flag will be NZ (Not Zero) if the "B" key was pressed.

Since left shift and right shift are separate, you can test for either key by load the "A" register with the byte at IY+7, and adding 3 to it. If it is NZ, then a shift key is pressed.

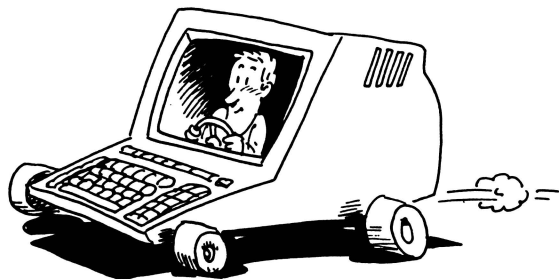
So there you have peeking at the keyboard using an OFFICIAL method. Some people claim it is easier to manipulate port 84H and switch the keyboard and video into main memory. This is fine as long as you are not doing bank switching. If your program does bank swapping, -remember- that bank 0 -must- be present when bringing in the video and keyboard, otherwise you may find you computer crashing, locking up, or providing unreliable results. But with the above routine, you -never- have to worry about this.

ANOTHER METHOD TO TEST CTRL

Another method to test for the CTRL key from machine language is by using the @KBD (8) or @KEY (1) SVCs. The technical reference manuals tell you that a key is present if the SVC returns a Z flag. What it -doesn't- tell you is that if the C (Carry) flag is -also- set, then the code in register "A" was the result of pressing a key in conjunction with the CTRL key! Therefore if the SVC returns a value of 13, for example, you now have a way to test if the user had pressed the ENTER key or CTRL-M. If they pressed CTRL-M, the C flag was set. Of course, this method is not infallible. If you press CTRL-ENTER, you will not be able to tell between that and CTRL-M. This is where it comes in handy to look at the keyboard image to check for the ENTER key.

24-HOUR TIME DISPLAY IN DIR

If you have LS-DOS 6.3.0 and want a DIR display to show the last modification time stamp in 24-hour format instead of 12-hour AM-PM format, build a file called



TIME24/FIX by entering BUILD TIME24/FIX and enter the following lines:

```
. TIME24/FIX
. Modify LS-DOS 6.3 to display
. update time in DIR listing for
. 24-hour clock, instead of 12.
. June, 1990 by David Goblen
.
. Use PATCH SYS6/SYS.LSIDOS TIME24
.
D09,11=00 FE 0D 18
F09,11=0C FE 0D 38
D09,37=00
F09,37=12
. EOP-----
```

Press BREAK or CTRL-SHIFT-@ to exit BUILD, and apply the patch using PATCH SYS6/SYS.LSIDOS:0 TIME24. If you later want to remove it, using PATCH SYS6/SYS.LSIDOS:0 TIME24 (REMOVE).

DOING IT ON A LASER, Part II

When a TRS-80 user first gets their laser printer, the first thing they want to do after trying to print something on it is get the (stupid) thing to advance beyond the first line. As you probably know, the TRS-80 sends only a Carriage Return (CR, decimal code 13) to the printer to tell it to advance to the next line. Some people have, in desperation, resorted to learning assembly language simply to create a filter to also send a Linefeed code (LF, decimal 10) to the printer after each CR. As outlined in my last column, I told you that you could use LPRINT CHR\$(27)"&k1G"; to force the printer to accept an single CR code, and force it to also advance to the next line. Fine, you say, it works. But what is all that gobbledy-gook between the quotation marks? And why does it work?

It works because those odd characters are its command language. Now, you might be more familiar with the english-looking commands statements that languages such as BASIC, C, Machine Language, Pascal, FORTRAN, or Cobol use. But regardless of what each command looks like, in the final analysis, each of these "tokens" are just -symbols- that represent something that they themselves are incapable of doing. The computer language processors simply look at the symbol and say, "Oh, they gave me this

instruction. That means for me to do this process over here." The PCL (Printer Control Language) is the same way. The reason that a PCL is so cryptic is to keep its language size down to a bare minimum. This means less typing for you, and also means shorter programs that also use this PCL to send instruction to the printer. Although it may be nice to use long, human-language oriented commands, in the final showdown it comes to a matter of practicality: why use several characters when one will not only do the job, but with one character the printer already has an idea what you want to do, rather than spend (waste) time and memory interpreting an instruction?

As you may have figured from reading the above, because the sample command used more than one character, we must have been telling it to do more than one thing. Actually, we were telling it to go to one -family- of instructions, and to select a -member- of that family, and then to do so-and-so with it.

As stated in the last installment, each PCL instruction for the LaserJet (or compatible) begins with the ESC (ESCAPE code — 27 decimal), followed by "keyboard typable" instructions. To keep this simple, we will stick with BASIC, where we can get immediate results. You machine language and C programmers (among others) can get the idea, and apply them to your language of choice as required.

Because the next instructions are keyboard typeable, from BASIC we must enclose them in quotation marks, and then, to prevent a CR code from being sent, we include a semicolon ";" after the second quotation mark. Thus our BASIC template will always be `LPRINT CHR$(27)"...";` where ... represents instructions that we will send to the printer, which will follow the ESC code (CHR\$(27)).

Before we take the plunge, you -must- remember that character case is VERY important when using this PCL. Thus you must be able to distinguish between a lower-case L "l" and the number one "1". Because CN-80 uses a printer which displays these two characters so similarly, as required in this series I will be using the slash "/" to -represent- the lower-case L.

Thus if you see a command such as `LPRINT CHR$(27)"&/1L"`, you know that you type the lower-case L in place of the slash "/".

STARTING OUT SIMPLE

To kick things off, we should first familiarize ourselves with the -few- commands that are not escape sequences (beginning with the ESC code CHR\$(27)). This is a short list, so don't panic.

BS — BACKSPACE — CHR\$(8): Moves the print positions one column to the left.

LF — LINE FEED — CHR\$(10): Moves the print position to the next print line, and maintains the current column position.

FF — FORM FEED — CHR\$(12): Moves the print position to the first line of the next page, and maintains the current column position.

CR — CARRIAGE RETURN — CHR\$(13): Moves the print position to the left margin of the current line.

SO — SHIFT OUT — CHR\$(14): Selects the secondary font until SI is received.

SI — SHIFT IN — CHR\$(15): Selects the primary font until SO is received.

See, I said it was short. Don't worry about what Primary and Secondary fonts are until we get to that point in a future column.

ESCAPE SEQUENCES

Now we get into the meat of the PCL, the Escape Sequences. Here we can make a laser printer do what we bought it for — to wow us.

It is not really important to know what those (funny) symbols mean in an escape sequence, as long as they work. Just as if saying the magic word XYZZY moves us between the the Well House and the Debris Room in Original Adventure (the first adventure game for computers), we really don't care what the word means, as long as it serves our purposes.

I have been stressing the `LPRINT CHR$(27)"&k1G";` instruction, but there are variations of that which you can try. When we use this

instruction, afterward the CR will tell the printer to use a CR+LF when it gets a CR, but when it receives a LF or a FF, it will still do what the above code descriptions describe. But by changing the command, we can tell it to do different things. For example, if we send

```
LPRINT CHR$(27)"&k2G";
```

it will tell the printer to interpret a CR as imply a CR, but when it receives a LF, it will first do a CR and -then- a LF, and when it receives a FF, it will do a CR first. You must remember that what the laser printer understands a CR to mean is -not- to advance to the next line, but to simply stay on the same line and move to the left column of that line. Finally, if we sent

```
LPRINT CHR$(27)"&k3G";
```

we would tell the laser to interpret a CR as CR + LF, a LF as CR + LF, and FF as CR + FF (this is the most TRS-80 compatible). Again, you must remember that CR + FF will -not- advance an extra line, but will simply move the print position to the start of the current line (I may sound like I'm beating a dead horse, but sometimes we must knock what we are used to on our TRS-80 printers out of ourselves).

Well, now that we know how to tell our printers how to advance lines without installing special printer filters into our systems, we need to be able to do something else. Although I think that doing some other things are more important, probably the first thing you want to do is to be able to select some of those neat fonts that are built into your printer. So let's play with what is involved in this arena first.

When you turn your laser printer on (and have it set to the LaserJet mode if it is not a LJ printer), the default setting is usually 10 pitch Courier, and is something called 12 point. Well, if you want to understand these terms, you must forget what you learned "in the shop" about the terms points and fonts, especially if you have had anything to do with publishing. A font as understood by the LJ is a type style, such as Courier, Romans, Helvetical, Line printer, etc. Point size on a LJ has to do with the fractional height of

the character. A 12 point font is 12 times 3 dots in height (we are using a rule of thumb, here). Since the standard LJ mode uses 300 dots per inch (DPI), we can figure that by dividing 300 by 36 (12 times 3), we know that a 12 point character is 1/8.33 of an inch in height. This is important when you get into desktop publishing. The term "pitch" most of you are already familiar with, as this describes the number of characters per horizontal inch, at least for fixed pitch fonts. Most fonts for the LJ are proportional spaced, meaning that there is no fixed pitch.

Since most laser printers usually come with only two basic fonts, Courier and Line Printer, we do not have much of a choice to play with. The best way to switch between fonts is to use "downloaded" fonts, which we can load from disk. These we can select simply by calling up the "ID" number. But this subject will be covered in a future column, where CN-80 will be offering a downloading program and a -large- selection of font files. Don't rush them though, because as of this writing I am still in the process of preparing the disks for them (the font disks will be placed in the File Cabinet collection -- so you know you will not be spending a fortune for them).

Anyway, selecting a font "manually" can get tricky, because there are many things that you must take into consideration. The outline is usually as follows: Once you have decided on a font, you must tell the printer to select its orientation (portrait or landscape), its character spacing (fixed or proportional), its pitch (if fixed), its point size, and its typeface. That's quite a shopping list. Of course you can skip any of these steps if you know that the printer is already set up for a step, and as you will soon learn, the LJ can figure what you want from only a partial set of instructions. For example, the printer starts up using portrait orientation (landscape prints the page "sideways"), it is usually in a fixed pitch mode (and set at 10 pitch), its point size is 12, and its typeface as COURIER.

Thus if you just "fired up" your printer, you can set the printer for 12 pitch (though it may not say you can), by changing the Horizontal Motion Index with the command `LPRINT CHR$(27)"&k10H";`. Now if you try printing anything, it will be in 12 pitch

"simulated". I say simulated because we have told the printer to set the character dot spacing to 10 (times 3) dots rather than the usual 12 (this is why we used the value of 10 in the instruction). We can set it back to 10 pitch by telling it to set the spacing to 12 (times 3) dots with the instruction `LPRINT CHR$(27)"&k12H";`. I know that this seems backward, but we are talking to the printer in terms of how much space to allot to a character, and not an actual pitch value, as it thinks it is still printer 10 pitch (we are already tricking our printer).

Now suppose we wanted to go into the Line Printer font. Since we are already in portrait, we do not have to worry about that, or about fixed pitch, since we are already there. The only two things we need to tell the printer is to select 16.6 pitch, and select the Line Printer typeface (We could also tell it to select the 8 point size as well, but if you provide the laser with 3/4 of the info, it will be able to figure things out — more on this in a future column). To select 16.6 pitch, we tell the printer `LPRINT CHR$(27)"(s16.6V";`. To tell it we want the Line Printer typeface, we use `LPRINT CHR$(27)"(s0T";`. We could combine these two instructions into `LPRINT CHR$(27) "(s16.6V" CHR$(27) "(s0T";`. To change it back to 10 pitch Courier, we could use `LPRINT CHR$(27) "(s10V" CHR$(27) "(s3T";`.

One final instruction you may find important before we wrap this month's column up, is to turn the Line Wrap on. Normally the laser printer is set up to chop off any line that goes beyond the right margin. To force it to simply wrap around like it does on a dot matrix or daisy printer (handy for program listings), we turn Line Wrap on with `LPRINT CHR$(27)"&s0C";`.

CONCLUSION

You are strongly suggested to dig into your laser manual and find the instructions we have covered this month. They will make much more sense once you see for yourself all the variables involved in a single instruction. Besides, I think it rather pointless to cover such material here when it is already published in the printer manual that you have hopefully not thrown away.

Once we have covered a few more basic commands, we will make things interesting

by getting into basic graphics, such as drawing boxes, lines, and shading squares. With the information I have provided this month, you already have enough printer control power to make your printer talk in a much friendlier tone to your TRS-80.

Finally, if you have any questions about the instructions in your laser manual that concern the PCL, address them to me in care of Computer News 80 (provide photocopies of the "offending" page if needed). I will try to cover them all in this column, and thus clear up any confusion that you and many others may have. As long as you do not understand these (odd) instructions, they will seem like an impossible task to comprehend. I recall being there not so long ago. Now they are almost child's play. You will think so, too. All it requires is a strong desire to learn, and practice, practice, practice. So crack those books, so when we get into downloading those fonts from your computer (I/III/4) using my soon to be released download program, you'll already be a seasoned pro.

Until next time, HAPPY COMPUTING!

-David Goben

LIVING IN A WELL-DEFINED WORLD

By David P. Miller

In this article I will address programming for high-resolution (H/R) graphics boards; both the Micro-Labs (tm) and Radio Shack (tm), when installed in the Model 4 TRS-80 (tm). While I have no prejudice against the Models I and III, the difference in the use of display and the program example used.

Any correspondence sent to me will be carefully considered. If enough interest is generated, this may become a regular column. If you have specific questions on the subject matter, I'll either attempt to answer them by mail or in another issue (restrict to H/R programming, please).

Both H/R boards provide 19,200 bytes (80 across by 240 high) for immediate display; the part you can see. Both provide additional RAM, but use of the extra

memory will not be covered in this column. The boards also contain logic to recognize port addresses in the range 128 to 131, respond to the data passed to and from these ports, and merge the H/R data with the text screen data on the way to the CRT processor. Most of this, however is transparent to the user; we need only be concerned with the memory addressing on the H/R board and the use of the control ports.

When a graphics data byte is sent to the H/R board, the eight bits in the byte are displayed horizontally at the current X/Y coordinate, with the most significant bit displayed at the leftmost position and the least significant at the rightmost. Screen addresses range from 0 to 79 across the screen (X) corresponding to text character positions, with each position holding eight dots; and from 0 to 239 vertically (Y) with each vertical text position corresponding to ten vertical dot lines. Each position used normally for text therefore contains a possible 80 dots; eight wide by ten high. A value of 128 (value of the most significant bit) written to screen location 0,0 will place a single dot in the uppermost left corner of the screen; a byte of 1 (least significant) will turn on the eighth dot from the left on the top row. This method gives 640 dots across the screen (80 bytes times 8 bits) and speeds up the movement of data by allowing us to move eight bits (dots) at a time, but sometimes requires programming solutions to obtain the correct horizontal placement.

The ports are used as follows; port 128 (X'80') is used to set the X (horizontal) coordinate for input/output of graphics data, port 129 (X'81') for the Y (vertical) coordinate, port 130 (X'82') is used to pass graphics data bytes to and from the board, and port 131 (X'83) for control data to tell the H/R board what to do. Also, the Radio Shack board uses port 142 (X'8E') for additional control information that will be discussed in a later issue. All communication with the H/R board is accomplished with OUT pp,nn statements where "pp" is the port number, and "nn" is the byte to be sent to the board. Meaning

of the bits sent to the control port (131, X'83') are as follows:

BIT=1	DOES THIS:	DECIMAL VALUE
0	Turns on the H/R display	1
1	Video Waits on R/S board	2
2	X direction (dec/inc)	4
3	Y direction (dec/inc)	8
4	X read clock	16
5	Y read clock	32
6	X write clock	64
7	Y write clock	128

Video Waits are used to eliminate static lines dancing across the screen, called 'hashing'. This problem only occurs on the Radio Shack board. Both boards provide automatic increment/decrement of the X/Y coordinates at the programmer's option, like the automatic increment of the text screen address when displaying text. However, the H/R board permits you to specify whether or not to automatically adjust the address, and which direction to use when doing so. Decrementing the Y coordinate gives the next dot line up, incrementing moves down, decrementing the X coordinate moves (8 bits, 1 byte) to the left, incrementing to the right. Bits 2 and 3 control the direction, bits 4 and 5 tell the H/R board whether or not to adjust the address after reading a data byte, and bits 6 and 7 control automatic address increment/decrement after writing a data byte.

By referring to the above chart and the comments in World Listing Number One, you will see how the ports are being used to obtain data from an /HR file and send it to the board. Note that the X and Y coordinates are set on each iteration of the Y loop; the X coordinate is automatically incremented after each byte representing eight horizontal bits is sent to the display; and you MUST have a 'standard' /HR file to use this program.

-David P. Miller

About The Author: David P. Miller resides in Okmulgee, Oklahoma (Guinness Book of World Records holder for largest pecan pie and pecan cookie, the latter 31 feet in diameter!) and is the Lead Programmer/Analyst for an oil company. His hobbies include restoring a 1950 De Soto and trying to give his wife's poodle away when she's not looking. He is the author of PostMaster which took a year to develop.

POSTMASTER REVIEW

by David Dalager

A brand new program — one that will let you do everything that the MSDOS Printmaster will do — easily and maybe even a little bit more. All of this on your model 4/4D/4P equipped with a high resolution graphics board and your dot matrix printer that's graphics capable.

HOW IT ALL HAPPENED

Around May or June of 1989 a delightful fellow by the name of David Miller called me in regards to an ad of mine in TRSLINK about some hardware he needed. We must have stayed on the phone for an hour or so discussing various things in the TRS-80 world; and that he made a living in the MSDOS world. David let it slip that he was a machine language programmer and did some things for his TRS80 model 1 and model 4. A little bit of horse trading took place and a friendship was begun. I had then mentioned how I would love to "easily" be able to do the things that Printmaster could do — Thus PostMaster was born. However, ALL the credit belongs to David Miller. David asked for the printer code table for my printer, a Tandy DMP2100P, which was sent to him.

FIRST VERSION

A few months later I received the first version of what was later to become PostMaster, but no documentation. At first I was chagrined — but a note was with it saying put the diskette in drive 1 and type in the command name.

David had told me that it was being written using the MicroLabs Grafix Solution HiRes board and would also work on the Radio Shack HiRes graphics board. Would I please test it on both boards to see how well it worked? Naturally I was flattered to do this for David.

DOES IT WORK?

Into drive 1 went the diskette, after typing in the command name, I nearly fell out of my chair. A beautiful title screen in a full screen window appeared so quickly that it took me a while to realize that the program was ready and waiting on me to tell it what to do. At the bottom of the screen was another window that went all the way across. In the window was a picture of an

ENTER key. Not knowing what else to do, I hit the ENTER key, and observed a new screen with a menu at the left, a beautiful graphic picture at the right showing the function the cursor was on. Down in the bottom window appeared the pictures of an ENTER key, and clustered ARROW keys. This program was telling me what to do, documentation was virtually not needed.

My telephone bill grew considerably as I called David Miller and expressed my joy and enthusiasm with this program. David told me to be patient, even more and better was forthcoming. All the king's men would never keep me from having this program. Even in it's unfinished state. David went on to add even more and better "bells and whistles", and even added lights.

An interesting side note: The place where David works has Printmaster. Several of the guys that David works with wanted a copy of it after seeing the program run on his model 4. Gleefully, David told them that it would not run on their IBM (MSDOS) machines. Poor, poor guys. They then wanted David to write one for their machine. Which David declined to do. They thought it was better than Printmaster.

WHAT DOES IT DO

Today, you can own the finest Poster/Letterhead/Shipping label/Mailing label/Diskette label making program that also has a Graphics Editor included. The graphics editor allows you to draw your own customized icon (picture). PostMaster comes with group of icons, borders for your labels, posters, and letterheads. There will be available a large number of icons from several sources that will work with Postmaster. PostMaster will save the label, letterhead, or poster designs to your diskette providing the convenience of not having to re-create your design or having to make up a large batch of labels each time you create a new design.

PRINTERS SUPPORTED

Many printers are supported by the current release, which covers the majority of graphics capable printers available today. Even a Laser printer (using the FX80 emulation mode) should work quite well. If you don't find your printer listed, just write a letter to David Miller and tell him what printer you have.

The list includes the Tandy DMP130 - 430, DMP2100P; Epson FX/RX; Panasonic KXP-1091, -1092, -1124 (in Epson mode); Star Gemini 10X/15X, NP/NX; and the IBM 80 CPS printers. There will be even more as the author receives more printer codes.

ICONS

The number of icons seem to be endless, however, the program comes with a set of 30 icons that in my opinion, every TRS-80 user would want. David spent a lot of time on these.

There is on the main menu a means of printing out each individual icon library, so you don't have to remember what is in it. As far as I know, even Printmaster doesn't have that. So far I have about 20 icon libraries, each containing 30 icons or pictures.

BORDERS

There is a menu of ten borders you can choose from or not as you may desire. All are available as you wish. Brick, shadow, electronics, paper stack, bolted block, cinder block, small town shoppe, and space are the borders presently available within the program.

LETTERHEADS

You can design your own letterhead using icons or not as you wish. You can choose any one of eight fonts.

FONTS

There are at present eight fonts: Gothic, Script, Headline, Hi Tech, English, Block, and Frontier. Using a border or an icon or both in the same label design can limit the number of characters of a font you can place on the first line of a label. You can design your label without either a boarder or an icon and still be very effective.

WHERE DO I GET POSTMASTER

See the authors advertisement in this issue.

In trying not to go overboard, or sound too enthusiastic about PostMaster, I hope that I didn't underplay this review. If I did, please accept my apologies. However, in talking with some of the others that were doing Beta testing of this program for the author, I fear that I grossly underplayed this review.

-David Dalager

(Editors Note) As one of the beta testers for David Miller's program some of our readers may have gotten an advance view of some of the labels that this program will create. Not only is it every bit as exciting as David Dalager's review, it is even fun to use; almost addictive in the number of uses one can put it to. For the home computer user, for the small business, and large business too, it is the first "real" label making program to come out of the TRS-80 programmers bag of tricks so far.

But it is short changing the program to just call it a label maker, but for want of a better description like "a graphic designers program complete with picture and font capabilities" it will be just as well to refer to it as the PostMaster program. Because beyond just labels, you can create your own letter heads, and posters for your business, or for that garage sale. Room here does not allow us to tell you all the things that you can apply this program to, just try it and let your imagination go. Bet your school kids would love to have their own personalized label. One problem, once you start you might just be making labels, or letterheads, or posters, for everyone on the block.

This one is a real winner folks, and if you haven't ever considered the need to upgrade your computer with a Hi Resolution Graphics Board, well here is the best reason to do it now, because PostMaster is a very useful tool that everyone will find a use for.

David Miller who has started contributing some of his other programs and articles to CN80 for the benefit of the TRS-80 users, has promised that he will tell us in upcoming issues some of the neat things that PostMaster will do that he hasn't put into his manual. What better is there than "hints and tricks" directly from the programs author. However, David Miller wants to make it clear that he is not interested in developing more icons, he is more interested in showing us TRS-80 users what these machines can do. -Ed.

LOOKING AT DATA BASES PART I

PFS FILE and PFS REPORT

by Hubert L. Johnston

I began my work with computers back during the 50's when everything was mainframes. Lots of work and not much fun. Then I moved into Hospital Administration and away from daily contact with computers. But I returned to my first love in the late 60's, moving rapidly from mini-computers to the micros. Suddenly, computing became thoroughly interesting and actually fun. I mostly use data bases, word-processors and tons of utilities, and am also working anew with some spreadsheets.

I use a Model 4P with 128k and two single-sided floppies in my home, but additionally I work with the Macintosh and IBM machines at other locations. Recently, I've scheduled several new projects and in that process thought that I would take the opportunity to use different data base programs, getting a thorough hands-on evaluation of each product. Then it occurred to me that to use this experience as a basis for writing reviews about each of the data base programs. So this is my first effort. Review number two will involve working with LITTLE BROTHER and review number three will concern ULTIMA, I hope. If my schedule holds up, review number four will involve GENERAL LEDGER and MULTIPLAN.

PFS FILE/REPORT, (F/R), although not a current product, remains a most useful and powerful File Manager. It's easy to learn and easy to use, a nice combination for a novice computer user. The manuals accompanying those programs are quite well written as well. I think that it is an especially good tool for the user whose computer system is limited to only two single-sided floppy drives.

If you have the DOUBLE-DUTY program you can boot it, and then load FILE into DD's module 1, load REPORT into module 2, and you still have module 3, with a miniature DOS available. Using the F1/F2/F3 keys, one is able to quickly switch back and forth among those three modules and that's a neat arrangement. Bear in mind, though, that as disk space is increasingly occupied, that copying forms, files, and/or changing

them, will require you to utilize an empty, formatted disk in one of your drives in order to prevent losing all the data you have entered on your data base. There is an easy way around all the hassle involved, if you utilize a program such as SYSRES/CMD, which allows you to load a few of your DOS modules into RAM, thus freeing up drive A into which to place that empty, formatted disk.

Because of this, I have placed SYSRES/CMD on my DOS disk; in such fashion I can boot the DOS disk, load SYSRES/CMD in RAM and then remove my DOS disk. Then, I load FILE or REPORT in RAM (whichever one I need to be working in at the time). I place the data base file in drive 1 and the blank, formatted disk in drive 0. So when I make changes to the data base forms, or do any copying of them, everything works without a hitch. This, of course, means working without DoubleDuty. That program, like many others (unfortunately!) doesn't like to share RAM space.

File and Report are a menu-driven programs and as such are easy to learn/use. I get nicely prepared reports either in hard copy form, or by CRT display utilizing the report options. By reducing the printer character size to 16 CPI, I can get an entire year's values on letter-size paper. REPORT provides subtotals/totals for all columns, averages for all columns, counts items in columns, sorts by keyword (in column 1 only), alphabetical/numerical sorting, and derived columns (maximum of three) using the +, -, *, /, (), and #N operators to provide addition, subtraction, multiplication, division, parentheses and use of the value in column N, respectively.

In addition, the user may store up to eight pre-defined report designs, you may alter the headings that are printed at the top of each column of a report, and you may have up to 16 columns in a single report.

The FILE manual offers separate chapters on designing a file, adding data to a file, copying a file, searching/updating the data base, printing copies of an individual record, removing a record or all records in a file, changing the design of a file, and a means of computing diskette storage capacity. The number of fields one may employ appears to be based on disk capacity

rather than any pre-set quantity. The FILE manual says that a single sided PFS data diskette with a minimum system on it can hold up to 1150 very simple records, that number increases to 2300 records with double-sided disks, and that the maximum size of a file on a hard disk is 4 megabytes.

I found some interesting un-documented commands:

1. You may produce those special symbols that do not appear on the keyboard (i.e., brackets, braces, back-slash, vertical bar, caret, tilde, underscore, and acute mark) by keying in the usual key combinations for those characters.

2. Left shift & right shift & clear produces the plus minus combination symbol.

3. Right shift & caps & clear returns the cursor to the "home" (uppermost left) position.

4. Shift & → moves cursor to bottom most left position.

5. Ctrl & H moves cursor to bottom most right position.

6. Ctrl & C brings last entered record to screen.

7. Ctrl & * brings blank record indicating page # to screen.

8. Ctrl & Y moves cursor to right most field on same line.

9. Clear & F3 deletes text retreating left.

10. Clear & F1 selects records in descending order, beginning with most recent one installed.

11. Ctrl & left shift & clear erases entered text all at one time.

12. Ctrl & left shift & X moves cursor alternatively to right most, left most positions.

Currently, I have half a dozen data bases running under F/R. These include a church membership (150 parishioners), a Food Pantry (food for indigents) client services data base (75 clients, and increasing), and a

volunteer list (50). Each of those data base files uses three different forms each.

SYSRES/CMD was authored by Jerry Locke, Rt. 1, Box 510L, Bay Minette, Alabama 36507-9801. I obtained it from TRS-LINK. The program operates only with LS-DOS, but can be patched to work with TRSDOS 6.2. The program is SHAREWARE. PFS FILE and PFS REPORT is a product of Software Publishing Corporation.

Utilization of data base (file management) techniques can add a truly interesting and powerful capability to your computing. Try it, you'll like it!

-Hubert L. Johnston

(Editors Note:) PFS FILE and PFS REPORT are two of the most ignored flat file data base programs, and yet they are extremely simple to use and have unlimited power in their application. It is one of our favorite programs, as we have dozens of small record keeping projects stored on disks using PFS FILE and some very large ones stored on our hard drives.

Keep in mind Mr. Johnston's comments about the use of the File program requiring the systems file to be present are related to the use of the PFS FILE and REPORT programs on a Model 4P. On a model 4 you boot up your PFS FILE disk in drive zero, when the menu comes up you then remove the PFS FILE disk and place your data disks in drive Zero, and off you go arranging or rearranging your data as you please.

PFS FILE is a free-form record system, that lets you set up your own form layouts, there is no set record length, or field length. And the flexibility really comes in when you print out your records. The way you print out your files is only limited by your imagination, and not by any predetermined method embedded in the program.

The great weakness in the manual, and there really is none, except that it did not give the user enough examples of how the program can be adapted to any given situation that you might have from keeping your Christmas list, complete with a list of previous gifts given and comments on what you should have given instead, to the inventory of your library or business products. The list goes on and on.

We appreciate Mr. Johnston's fine review, and also his tips on the undocumented key functions. After using this program extensively for six years, we never stumbled on to them. But I guess we never took the time to experiment with the program, except to find new ways to set up file forms, and to print out reports that are such an important part of our business.

Many of you who might be turned on by this review are going to be disappointed in not being able to purchase this program. Tandy dropped it some years ago, and left over stock was depleted in about 1988. If you see this program in the used stack of a neighborhood swap meet, do not - delay grab it! The originals came as two separate program packages, each selling at \$124 each. We paid that much for ours new in 1984, and have never regretted the investment because of the use we have gotten out of them and are still getting out of the programs. Maybe it's about time we started running some more hints and tips of using these programs, as the last we ran were sometime in the early issues of CN80 in 1988. Maybe it would be a good idea to publish some PFS FILE templates, just to help you get some ideas for your own record keeping. Time permitting we will keep that in mind for future issues, unless we can get a volunteer. -ED

DAVID'S LATEST UTILITIES A REVIEW by Dick Houston

David Goben has done it again! How does a guy who admits to having a regular job manage to find the time to write great articles for CN80 and still turn out application programs and utilities for us TRSers? Anyway, he does, and we all gain immeasurably from his efforts.

David's Model 4 Systems Utilities Package and David's Model 4 File Utilities Package (both available from CN80) are the latest offering. They are compilations of utilities that David has written for his own use, some of them enhanced for more general use. They are, therefore, real working man's tools.

There are basically two kinds of reviews one just tells what's in a software package and what it does; the other is an in-depth report of tests of the package. This one is a combination of the two, since there wasn't time before the CN80 deadline to do lengthy tests on all of the utilities. Some comments are brief, others are a bit more detailed.

First the system package, a total of 16 utilities! CAL produces on the screen or on a printer a small (about "wallet-size") calendar for the month that contains whatever date you enter, with the specified date enclosed in brackets. CLEANUP overwrites all unallocated granules on a disk with zeros. This removes all traces of old files, primarily for security reasons. It might also help solve other problems, such as when my Superscript occasionally finds and inserts material from some long-forgotten file! CLOSE can close any or all open files on a disk. DATECONV extends the dating format for disks created by a DOS prior to LDOS 5.3, LS-DOS 6.3, or TRSDOS 6.2.x modified by T62DOSXT.

DISKKEY is an unusual utility that lets you lock space on a disk. It can lock out bad sectors but its more advanced use is to reserve disk space for some particular use. DOS will then pass over the reserved space when writing files, but the user can still read from and write to the reserved space. MAKE1 is the kind of utility that you're not likely to need, but if you ever do, it would save a lot of time. It converts a double-sided disk to a single-sided one - just the formatting of a blank disk, not files! If you have a stock of preformatted double-sided disks and on occasion need a single-sided one, this is the way to go. MEMCHK displays or prints the drivers and filters that you have installed in the system and also shows which extended memory banks are available, if you have extended memory. You can also reserve extended memory banks if you like.

ONEPASS is a handy utility that formats a target disk and backs up a source disk in a single operation. A backup with a source disk with files taking up all but 57K took one minute thirteen seconds and only one command. Possibly no big deal for a single disk, but a great time and effort saver if you have several disks to back up. PRINT is

unusual. I've always considered it odd that DOS provides no direct, easy way to send things directly from the keyboard to the printer. To send a printer code, for example, the only easy way is to go to BASIC, LPRINT CHR\$(X) codes, then go back to DOS. PRINT lets you do the same thing without going to BASIC. For text you merely type PRINT Text to be printed. For printer codes and characters not on the keyboard, you use special codes that begin with the character @. Several common things, such as line feed and form feed, have their own codes. Others are done with codes for decimal or hex numbers. This is the only place where I ran into trouble with the utilities that I put to the test. Neither the decimal nor the hex codes worked with my DMP120 or DWP510 printer. I'm sure there is a simple reason and a simple fix, but there wasn't time before the CN80 deadline to consult with David. No doubt CN80 will carry the information shortly.

SYSDRV lets you change the drive number that will contain the /SYS files without actually changing the logical drive numbers. In other words, your system files can be on a disk other than :0, but your lower drive will still be :0 and your upper drive will still be :1. UNDATE - with a mixture of files from several DOS versions, a file with the newer dating system can present a problem. UNDATE lets you change a 6.3-type disk back to the pre-6.3 dating system. VERDISK reads an entire disk (floppy or hard) and reports any errors. The documentation doesn't say what kind of errors are reported. A test with disks known to have flawed and locked-out sectors produced a "No errors" report. Probably locked-out sectors are ignored. Incidentally, an inadvertent attempt to check a drive that contained no disk produced a report of "Illegal drive number" - no real problem, but I was confused for a moment!

XDRIVE could be a real lifesaver if you should encounter the problem that prompted David to write the utility: You are in the middle of a big programming job and a disk drive dies! With XDRIVE you merely tell the system to recognize one good drive as either of two different drive numbers. As required, the system prompts you to insert the disk for drive X and press enter. You have to do a lot of disk swapping, but it

beats being totally out of operation! XMEM provides extended memory management. It gives you great flexibility in accessing extended memory. I didn't test this one because I don't have extended memory. This utility, very useful in itself, is on the disk primarily to support the next one: XMEMDISK, which is a virtual memory disk driver. It provides capabilities beyond those of the system's MEMDISK, in that it can access more than two extended memory banks if you have them installed. You can also create multiple memdisks rather than just one.

The final utility in the system package is YANKRES, which lets you deinstall SYSRESED /SYS files without having to reboot the system.

Now to the file package, a group of 9 utilities. DSPTXT is a very useful utility for displaying or printing text files. You have no doubt used the DOS LIST command to see the content of text files. It dumps the file to the screen or printer, but just as it is on the disk. Words break at the ends of lines, tabs just don't do anything useful, etc. Also you have to stop the display where you want to examine something, and if you miss something or want to go back and take a second look, you have to start all over again. Now imagine a utility that treats the file as would a sophisticated word processor - that's DSPTXT! Words wrap around and don't break at the ends of lines, tabs are expanded as they should be, and only a screenful of text is displayed at one time. You can also move around freely in the text as you choose. For printing, you can even specify page length, lines per page, and left margin! Embedded graphics can be printed if you have an appropriate printer. If you work with text files, DSPTXT alone is worth the price of the package!

ERASE is another program for removing a file completely instead of just deleting its directory entry. The directory entry and all allocated records are overwritten with zeros.

INDEX4 is also worth the price of the entire package! It displays or prints, in alphabetical order, all files on a disk and provides 65 spaces after each one for your insertion of information about the file. This

information is written to a file on the disk. Thereafter you can enter INDEX4 instead of DIR and get the complete file index. When you add or delete files, INDEX4 automatically updates the next time you use it and you can add notes about the new file(s). You could have a problem if you have only two drives and there is no room on your system disk to install INDEX4. In such a case you could give up a bit of disk space and copy INDEX4 to your data disk. INDEX4 itself requires 4.5K and the index file I created for a disk containing 23 files took only 1.5K. So for 6K (out of 174K) less space on your disk you get a very handy disk index. I, for one, can live with that!

KILL lets you dispose of files using KILL instead of REMOVE. I personally have never seen why it makes any difference, but I suppose there could be a problem for someone who uses both Mod III and Mod 4 regularly! MAP displays or prints the memory locations of load-module files. For anyone who hasn't delved into the mysteries of DOS, any file that you can call by just entering its name at the command line must be in the specified load module format. The format precedes the actual working part of the file with various information that DOS needs to load the file. The MAP display is very similar to that of the DOS FREE command, but in addition the sectors containing the specified file are identified. The entry point of the file is also shown. If you specify two or more files, the information on the separate files is displayed consecutively as you request it. If you specify a data file or a BASIC file instead of a load-module file, the screen shows "Assume data file" and still shows the memory allocation.

MODLRL lets you easily modify the logical record length (LRL) of a file. You might need to do this, for example, to adapt a file created by one program to be used by another program. You could convert the original file to the LRL of a word processor, edit the file using the flexible features of the word processor, then use MODLRL again to convert back to the format of the original file. MOVE speeds up the process of moving a file from one disk to another by copying the file to the new disk and then deleting the file from the original disk. A test showed that the whole

operation took negligible time and avoided having to enter two separate commands.

SAVBAS is a great utility for a BASIC programmer. If anybody who does an appreciable amount of programming in BASIC ever tells you that he has never left BASIC without saving a program, you'd better check his credentials! Actually I've lost few "first editions" of programs that way, but all too frequently I've squashed bugs and/or made modifications and forgot to save the new version. I really didn't know that the program wasn't deleted until I read David's docs. The program is still there if you haven't turned the computer off or used the memory space for something else. I typed in a small program and then entered SYSTEM, leaving my program dangling. Then I used SAVBAS and looked in the directory — almost miraculously there was my program!! Incidentally, you enter the desired program name when you use SAVBAS, since up to that point a new program has no name or if it is a revised program, SAVBAS won't let you overwrite the existing file.

Finally, UNREMOVE is another OOPS! type of lifesaver. If you have dumped a file with REMOVE, PURGE, or KILL, and haven't yet written some other file, UNREMOVE will restore the file. Actually the file was still there, of course, and UNREMOVE just restored the directory entry. Sooner or later, you'll need this one!

Some general info — Each package comes with a very good instruction manual that is well written, with full information on each of the utilities. In keeping with David's well-known devotion to providing generous assistance to the TRS world, there is no copy protection so that you can freely copy the individual utilities to where they are needed. All utilities are, of course, fully copyrighted and for use of the purchaser only.

In closing — we all owe David a vote of thanks for these two packages — as well as for his many other efforts.

-Dick Houston

GIF4MOD4: A GRAPHICS IMAGE DECODER

By David P. Miller

GIF4MOD4 Version 2 runs on the Tandy/TRS-80 Model 4 with 64K RAM and at least one disk drive. \$39.95 from J.F.R. "Frank" Slinkman, 4108-C Fairlake Lane, Glen Allen, Virginia 23060.

After installing my first high-resolution board, it took all of three days before I was wondering just why I had spent the money. The capabilities for excellent graphics displays were there, but I just couldn't find anything to put up on the screen. Being an avid 'modemer', I checked out the graphics file areas on several Bulletin Board Systems (BBS's) and quickly found that almost all of the graphics picture files available were stored in something called a 'GIF' format. Also available on the BBS's were GIF readers for (it seemed) every computer except mine.

Looking at the situation a little closer, I found that 'GIF' (an acronym for Graphics File Interchange format) is a format developed by Compuserve and released for public use to provide the capability of displaying graphics pictures on any computer with the appropriate resolution, regardless of brand. Since the 'GIF' format provides information to a GIF reader about how the picture is to be displayed, rather than just containing graphics bits, the program reading and displaying the file can create a close approximation of the original image even though a computer has different display capabilities than that of the source computer. A GIF image that started out in color can even be converted to a gray-scale (black and white) image that is quite close to the original.

Just when I was about to give up and resign myself to a loss, I saw the ad for GIF4MOD4 in the March 1990 issue of Computer News 80. Wasting no time, I immediately ordered the program and sat patiently by, reading and re-reading in anticipation the long lists of GIF filenames I had captured from several BBS's. The package arrived even sooner than I expected; I quickly ripped it open, made a backup, and typed in "DIR" to see what was on the diskette. The GIF4MOD4 distribution package consists of one diskette with

several example files, the GIF4MOD4 program, some utilities, and the manual in a 31K /DOC file.

DOCUMENTATION

While I can sympathize (from experience) with the economic pressures that lead to the use of /DOC files, I tend to expect printed documentation with programs costing more than \$25.00. This is of course a personal opinion, but there are still people that do not have a printer; reading and referring to a manual in this form can be trying. The documentation, once printed out, is well-written and logically laid out. Mr. Slinkman makes a potentially confusing subject easy to understand. Starting with installation on a working disk, going on to operation of the program and use of the utilities, then proceeding to discussions of the more advanced use of the program and specifics about the included /GIF files offers all the information the user needs at any stage from beginner to expert.

OPERATION

Typing GIF4MOD4 at the DOS prompt without specifying a filename results in a command summary display on the parameters that can be used. All pertinent phases of program operation can be controlled by the user through switches following the filename, including several to affect the translation of the image for proper display on the screen. In most cases, a menu is displayed offering one of six "dithering" options for image translation.

DITHERING

"Dithering" is a term that refers to the process of averaging out the dots in an area of the image to approximate the original brightness through separation between the dots placed on the screen; the brighter an area is to be, the more dots are displayed. GIF4MOD4 checks the dot density surrounding the area under consideration against the information in the file, then places dots to create the closest possible effect. Since there are six different methods of dithering available (and 'No Dither'), the user can experiment to obtain the best possible image from the file. Once this is done, GIF4MOD4 will create an /HR file when the appropriate switch is specified.

In every case I have experienced, the

program has performed flawlessly as claimed. No loss of control or re-boots have occurred, and the user can press the <BREAK> key during program operation to abort the current activity and return to DOS.

UTILITIES

HR2GIF, also included on the diskette, converts /HR files (both Model III and Model 4), /HRG files, /CHR files, and Pro-DRAW /BLK files to /GIF format. APENDGIF/BAS combines /GIF files into multiple image files for slide-show type displays. JCL files are provided to convert 'PC-compatible' files from CGA, EGA, or VGA GIF formats to a format displayable on the Model 4 high-res screen. You can change the default drive as you wish, and a BASIC program is provided that reports information on GIF image files.

PROBLEMS

The manual gives instructions at one point to press <CTRL><R> to repeat a command, but this sometimes results in an attempt to create a temporary workfile. Upon attempting to run APENDGIF/BAS, a type mismatch occurred. Examining the line specified, I noticed an apparently unclosed parenthesis. Other than this, everything seemed to perform flawlessly. As Mr. Slinkman mentions in the manual, the limitations of the TRS-80 are the cause of the seemingly long time to process a GIF file. While I have my own reservations about this, GIF files are typically 30K and more in length, and stored in a compressed format; this indicates an extremely large amount of data to be processed per image. Still, the time is not too great for the results achieved.

CONCLUSION

The GIF4MOD4 package is an important tool for anyone owning a high resolution Model 4. Since most sources of image files use the GIF format, this program opens the door for the TRS-80 to share in the high-resolution fun. Because of the speed of the program, it seems best suited for use for conversions to the TRS-80's native /HR format. Although the documentation is supplied in disk file format instead of as a printed manual, it is well-written and easy to understand. With the exceptions noted above, the programs are bug free and do the job admirably. For anyone wishing to

make use of the (literally) thousands of GIF files available from BBS's and distribution points such as The File Cabinet, GIF4MOD4 is indispensable.

-David P. Miller

THE HP-DESKJET PRINTER

by Hans de Wolf, Haarlem, The Netherlands

A previous issue of CN80 asked for some information about the use of the combination of a TRS-80 and a modern printer like a laser printer.

I have used a Hewlett Packard DeskJet Plus inkjet printer with my TRS-80 model 4P for some time now, and want to present some of my experiences to the readers of CN80.

PRINTING TECHNOLOGY

First let's discuss the printer. The Hewlett-Packard Deskjet Plus printer is an inkjet printer. It is not a page printer like a real laser printer (which first builds a bit image of the complete page in its memory before printing), but prints line-by-line like a conventional dot matrix printer. The printhead does not contain wires that are fired against a ribbon, but contains 50 tiny nozzles and an ink reservoir. Each nozzle has a small electric heater. If a dot must be printed on the paper, the heater in its nozzle is switched on. This causes the water-based ink to boil, and the pressure of the vapor ejects a droplet of ink from the nozzle to the paper. The distance between the nozzles is small enough to produce a vertical resolution of 300 dots per inch. The horizontal resolution is 600 dots per inch, but because a nozzle cannot fire twice in sequence, it is effectively also 300 dots per inch. In the past inkjet printers were troubled by ink clogging the nozzles, but HP has solved this problem by developing a disposable printhead that contains the complete printing mechanism: the ink reservoir, the nozzles and heaters. If the ink supply is empty, you should replace the complete print head (costing about \$25) with a new one for another half million characters of high quality print, or twice as much in draft quality.

The printer comes equipped with a sheet feeder. It can also print on envelopes (which must be fed manually), but it cannot print on fanfold paper. Other hardware features: both a serial (RS-232C) and parallel (Centronics) interface, and two slots for expansion cartridges.

PRINTER FIRMWARE

The printer is equipped with a 16 kbyte buffer and its own processor (a 4MHz Z80 for the original DeskJet and a 8 MHz Z180 for the DeskJet Plus).

To control the printer features from within a program you must send escape codes consisting of the ASCII escape character (CHR\$(27) in BASIC) and some normal text characters. These escape sequences are defined in HP's Printer Control Language (PCL). There are a number of versions of PCL, ranging from level 1 for the most simple printers to level 4 for the LaserJet II and level 5 for the new LaserJet III. Formally the DeskJet is designated as a PCL level 3 printer, but most of the level 4 functions are included, plus a number of unique extensions.

FONTS

Apart from its speed, low noise and print quality there is another reason to use a DeskJet: its capability to print in many different fonts. The Courier font with variations (bold, half and double width, underlining, subscripts and superscripts) is standard, the DeskJet Plus offers also italics and a landscape option (print rotated 90 degrees).

If you want more fonts there are two ways to add them: font cartridges and soft fonts.

The font cartridges are the most simple to use: insert a cartridge in one of the slots and it is ready to be used - just activate a font from the front panel. However, font cartridges have their disadvantages: they are expensive (because you pay for software and hardware) and they offer only limited flexibility.

The soft fonts are an alternative to cartridges. Soft fonts are supplied as disk files which can be downloaded into the printer by means of a simple program, but before the DeskJet can accept them you

must increase its memory by adding one or more RAM cartridges. The original DeskJet can accept up to two 128k cartridges, the DeskJet Plus can also accept 256k cartridges. The required amount of RAM depends on the size and number of characters in a font. A medium sized font with the 7-bit ASCII set costs about 20 kbyte. You can store any combination of fonts in the RAM cartridge, making it more cost effective and flexible than a font cartridge. However, you must accept that downloading takes time: about the same time as copying a file of the same size on a floppy disk.

DIFFERENCES WITH A LASER PRINTER

In many cases the DeskJet can replace a more expensive laser printer, but there are a few differences you should be aware of.

- In most cases the DeskJet is slower than a real laser printer.

- The DeskJet is less expensive than a real laser printer, but the cost per copy may be higher.

- The ink is water based. This means that you should select your paper carefully. It is not necessary to buy the expensive special ink jet paper, but the printout is not water-proof and is as susceptible to smearing as a copy written with a fountain pen. Label printing is difficult because most labels do not absorb the ink.

- The PCL level 3 language does not include all laserjet commands. Missing are commands to draw lines or shaded boxes, or to create multiple copies. PCL macros are not supported. The print head movements are restricted: you can move to the left, right and bottom, but upward movements are restricted to only the few lines not yet printed to prevent smearing.

- The DeskJet softfonts and LaserJet softfonts are incompatible (but there are MS-DOS programs to convert LaserJet fonts to DeskJet format). The DeskJet cannot use landscape softfonts.

DESKJET AND TRS-80

The DeskJet can perfectly be used with the TRS-80. It connects to the parallel interface without a problem, but you must remember to change the setting of one

DIP-switch to tell the printer that the TRS-80 does not send a linefeed (ASCII 10) after a carriage return (ASCII 13).

There is not much TRS-80 software available for the DeskJet printer. Prosoft's AllWrite with the LaserJet option and the improvements made by Gary Shanafelt and Lee Rice works perfectly with the DeskJet, with good support for soft fonts. [Note: Prosoft no longer provides software support, and are no longer selling their "Allwrite" word processing package.] Version 2 of Anitek's "Lscript" includes support for the HP LaserJet, which may work with the DeskJet. For those who want to print graphics there is a program available from Frank Slinkman to print GIF images.

If you use software where you can specify the printer escape codes yourself, then it should be possible to modify the program for PCL escape sequences.

For all other TRS-80 software I recommend the Epson emulation cartridge. If you insert this cartridge in the DeskJet it will behave as an Epson FX-80 printer. It will accept the Epson escape codes and Epson bit image graphics (like those from "DotWriter"). It will even accept the downloadable fonts in Epson format. In addition to this it will give you an extra size Courier font, an Prestige Elite font (normal and italic) and a proportional spaced typeface. Some things are not possible when you insert this cartridge: the DeskJet will no longer accept PCL commands because they would conflict with the Epson codes. This means that you cannot use soft fonts or landscape printing when this cartridge is connected. Only a few unimportant Epson features are not emulated, such the codes to select and deselect the printer and the bell signal. I have not encountered any problem with the emulation.

HINTS AND TIPS

Here are a few hints and tips for those who are considering to buy a DeskJet printer, or already own one.

If you are planning to buy one, make sure that you give attention to the differences between the original DeskJet and the DeskJet Plus. I think that the improvements in the Plus are worth the extra cost, but

the original DeskJet may be a real bargain if you do not need these features. The differences between the DeskJet (DJ) and the DeskJet Plus (DJ+) are:

- The DJ+ is faster, especially for graphics (5 times as fast).
- The DJ can only handle 128k RAM cartridges, the DJ+ can also accept 256k cartridges.
- The DJ+ comes with standard Courier italic and landscape fonts. The original DJ requires an additional cartridge for this.
- The spacing of proportional fonts like Helvetica and Times Roman for the DeskJet Plus is improved.
- The DeskJet Plus can handle fonts of up to 30 points. The original DJ was limited to 24 points (1 point is about 1/72 inch), but fonts with descenders were limited to about 18 points.

It is possible to reduce the cost per printed copy significantly. According to Hewlett Packard you should replace the printhead when it is empty, but it is possible to refill it with fountain pen ink. I know that many users refill their printheads without problems, but you should be aware that there is always a small risk that ink may leak into the printer.

Most DeskJet users will sooner or later start to use soft fonts. Hewlett Packard sells a small collection of soft fonts (look alikes of the Times Roman and Helvetica typefaces, and Univers Condensed), but much more fonts are available in the public domain as LaserJet soft fonts, which can be converted by the MS-DOS program LJ2DESK. Access to an MS-DOS computer is important for soft font users because most fonts on disk are only available on MS-DOS disks.

FOR DESKJET OWNERS...

Here a a few items for the readers that already own a DeskJet printer:

When you download soft fonts into your printer, make sure that you always download the largest fonts first. The RAM cartridges are divided in banks of 64 kbytes each, and a font must completely in a bank.

The DeskJet always stores a font in the bank with the most memory available. Downloading small fonts first may cause a problem when you try to add a large font: while the total amount of free RAM can be sufficient, but none of banks may have room to contain the complete font.

You can get a print-out of the fonts loaded into RAM by starting a self test: keep the FONT button depressed while you press RESET.

When you have changed the DIP switches to generate a linefeed after a carriage return, "Allwrite" will print extra blank lines because the HPLASER/TAB driver send separate linefeeds. The solution is simple, add this "Allwrite2" command to HPLASER/DEF:

...;SY@27,38,107,48,71

This stands for the PCL command code ESCAPE & k 0 G: disable automatic linefeed generation. At the end of the document "Allwrite" will reset the printer to the linefeed mode specified by the DIP switches.

In order to reduce RAM requirements and download time use soft fonts with the ASCII symbol set when possible. Use other character set only when required.

Who will write a program to convert LaserJet fonts to DeskJet fonts that will run on a TRS-80 ? Or even better: a program that can convert between HP LaserJet, HP DeskJet, DotWriter and Fontasy fonts? Can someone create a soft font editor like TGEAP in the DotWriter package? Another idea: who wants to create a soft font that contains the TRS-80 character set(s)?

-Hans de Wolf

(Editors Note:) CN80 and David Goblen as a staff project are presently working on producing softfonts that can be down loaded to your laser printer from your TRS-80 Model 4. But we would welcome any input and ideas from those who already own a laser printer or a deskjet ink printer. In any event if you love your TRS-80 and the way it handles word processing, then you don't have to give it up to take advantage

of any of the new technology items such as the new printers, dot matrix, ink jet, or laser printers. Consider the memory expansion being developed by Anitek, mouse capabilities and the high resolution boards from MicroLabs, just as a few examples of the new technology items that can be added to the TRS-80 computers. If you look at the cost of these additions, compared to the cost of the same items for MS-DOS compatibles, you can really save a lot of bucks by doing it on your TRS-80! -CN80

PRO-WAM: A REVIEW

by Mark Allen Reed

PRO-WAM, the Model 4 window and applications manager, requires two disk drives and at least 128K of RAM. It is available from MISOSYS, Inc. (P.O. Box 239, Sterling, VA 22170-0239).

THE PROGRAM

The main program, PROWAM/CMD, installs a module in the Model 4's high memory. This module performs two functions.

First, it provides standard "pop up" window routines. You can use these routines from within your own programs, as long as your programming language allows you to invoke PRO-WAM's supervisory call (SVC). LS-DOS BASIC has this capability, but TRSDOS BASIC does not.

Second, it manages a disk library of tiny applications programs. These applications are designed to pop up over whatever you are doing. For instance, you could be programming in BASIC and decide to pop up a calculator to figure out a "PRINT @" address. Or you could be writing a letter and pop up the address file to get a name and address. When you're done with a pop up application, just press <BREAK>; its window will "close" and you can continue where you left off.

The best part about PRO-WAM's applications is that they can transfer information back and forth with the main program. You can transfer information from the calculator to the BASIC program (in a

process known as data export), or you can transfer data from the word processor to the address file (in a process known as data import).

Four of PRO-WAM's applications are stored in an extended memory bank of the Model 4. The rest are retrieved from disk as they are needed.

THE APPLICATIONS

PRO-WAM includes seventeen tiny applications: an address file, an algebraic floating point calculator, an appointment book, a calendar display (which is integrated with the appointment book), two kinds of card files, a card file form creator, a character set display, a telephone dialer, a video display saver and loader, an address header (which is integrated with the address file), a shorthand phrase expander, a reverse Polish notation integer calculator, a tiny terminal program, a "to do" list, and a typewriter emulator.

Most of the applications do what their names imply, but two of them require explanation. The address header takes a name and address from the address file and exports it in a format suitable for the heading of a letter. The shorthand phrase expander accepts two-letter abbreviations and exports phrases up to seventy-eight characters in length. For instance, the letters "cn" might expand to the words "Computer News 80", or "i2" to "in the party of the second part".

PRO-WAM also offers a built-in application that emulates the "DOS Ready" prompt. Have you ever wanted to copy, delete, or rename a file in the middle of a program? Pop up PRO-WAM and you can.

MISOSYS offers additional PRO-WAM applications in its Mr. ED package, and several more are available from other sources.

THE DOCUMENTATION

PRO-WAM's documentation ranks among the best I have seen. It is complete, easy to understand, and occasionally humorous. The instruction manual includes a table of contents, glossary, and index, and it is attractively packaged in a 7 by 9 inch blue binder.

PRO-WAM also includes a help program, HELPP/CMD, which provides reminder screens to refresh your memory.

OTHER PROGRAMS

Rounding out the PRO-WAM package are PSORT, which sorts (and optionally compresses) PRO-WAM data files; PRUN, which runs a PRO-WAM application from the DOS prompt or a JCL file without invoking PRO-WAM's applications menu; WAMLIB, which rearranges applications libraries; and DEFAULTS, which changes any of PRO-WAM's default settings.

CONCLUSIONS

It did not take me long to get used to the luxury of having a calculator, calendar, character set display, typewriter emulator, and DOS command line available from within any program. The shorthand phrase expander and card file have also proven useful on several large writing projects.

Now that I've used PRO-WAM, I never want to do without it. If I had to cast my vote for the best program ever written for the Model 4, PRO-WAM would be it.

-Mark Allen Reed

MODEL 4 UTILITY DISK MANUAL CORRECTION

by Mark Allen Reed

Page 2 of the instruction manual for my Model 4 Utility Disk explains how to install CMDEDIT, the command line editor. According to the manual, the first command to type at "DOS Ready" is COPY CMDEDIT/CMD SYS13/SYS.LSIDOS:0 (C=N).

This command is correct if you are using TRSDOS 6.2 or LS-DOS 6.3. If you are using LS-DOS 6.3.1, however, you should change this line to COPY CMDEDIT/CMD SYS13/SYS.SYSTEM6:0 (C=N). The password for SYS13/SYS has changed from LSIDOS to SYSTEM6.

Other than this small correction, I have received no bug reports for the Utility Disk.

Mark Allen Reed, Reeds' House of Color
Glen Road Plaza, West Lebanon, NH 03784

WHAT I DID WITH MY TRASH REVIEWED by Henry A. Blumenthal

"What I Did With My Trash", subtitled "Ten Years With a TRS-80", is 72 pages of humor (sort of) interspersed with tips on conquering (sort of) the limitations of Scripsit and SuperScripsit. It was written by Eric Bagai and published by Flaming Sparrow Press of North Hollywood, California. Suggested retail price: \$5.95

I was hoping for reminiscences of shining moments and frustrations of the TRS-80 in general; instead, I got some humor in questionable taste, some tips on using word-processing programs that I haven't touched in five years, and a tongue-in-cheek tutorial on writing a "GW-NORTH" BASIC program, i.e.:

```
40 INPUT BEER%(SOME), EH
50 ON BEER%(EMPTY,GONE) GOTO
   BEER%(RUN), OK, EH.
```

His hints on the use of Tandy's venerable word processing programs, Scripsit and SuperScripsit, would have had relevance if written in 1980. The problem is, he assumed that the hints that worked for Model III Scripsit will work on the Model 4, which has its own, much easier ways of doing some things. For example, Bagai went into some detail on simultaneously pressing three-key combinations to produce special characters, such as brackets and underlines, and even how to create special files to hold them for evoking at will. Although he says Model 4 Scripsit is the same as Model III, he did not seem to know that special characters can be evoked effortlessly on the Model 4 by pressing the clear key with one other key, and that the clear key, not the @, is the control key for all functions.

On the other hand, his tips on such things as inserting type within Scripsit were illuminating. Trouble is, I haven't used Scripsit for a half decade. Not when I can have on-line spell-checking with windows, alternate screens, italicizing, boldfacing, proportional spacing, and mixed type sizes and faces. Bagai's explanation of SuperScripsit, describing it as the kludge that it is, was on the mark. He also bashed Tandy for not marketing TRSDOS machines better and for insisting, until it was too late, on supporting only the handful of programs that it carried on its shelves.

Again, on the mark. But all this is old stuff.

How many years did Mr. Bagai have his "Trash"-80? Did he ever graduate to a Model 4? Did he ever give it extra memory? Did he ever install a hard drive on it? Did he ever use it for spreadsheets, databases, music? Did he ever avail himself of the excellent software out there from Anitek, PowerSoft, PFS, MISOSYS, Goben? Did he utilize windows, KSM? It would seem that he was familiar with none of these things. There are so many things I would have liked for him to have shared with us. I wish the title of his book had been, "What I'm Still Doing With My TRS-80". THAT would have made for an interesting book.

-Henry Blumenthal

ALLWRITE LASER PRINTING Part 1 by Lee C. Rice

Hewlett-Packard introduced the first laser printer in the mid-1990s, at just about the time that many software producers were migrating from the Model 4 world into MSDOS. ProSoft, manufacturer of Allwrite and Dot-Writer for the Models 3 and 4, and several earlier text processors for the Models 1 and 3, began work on a Laser Support Package for Allwrite in 1985. At that time the people at ProSoft were themselves developing software for the newer MSDOS systems, and apparently scrapped the undertaking of any large software development for Allwrite and the Model 4 midstream. The Laser Support Package was not advertised at all, but notices were sent to some of the several thousand registered Allwrite owners, and several dozen packages were distributed in this way.

Because ProSoft had neither the time nor the capital to invest in updating or supporting the package, which originally provided support for the Laserjet only (with an additional supplementary package for the Laserjet-Plus machine), it quickly became dated. Hewlett-Packard introduced the Laserjet-2, then the Deskjet printer (which, while based on an entirely different technology, has a major subset of the PCL language built into its ROM), and then (in 1990) the Laserjet-3 and the HP-P (personal

laser printer).

During the past several years, Gary Shanafelt and I have done extensive software development, starting from the original ProSoft laser Support Package, in order to keep Allwrite up to date with the quickening pace of laser and inkjet technologies. One reason I had was that Allwrite was and is currently used as a "production system" for many books and magazines published by Marquette University press. One reason both Gary and I had was a real liking for Allwrite and for the Model 4. The editor of CN80 has asked us to prepare a series of articles and (later) shorter monthly columns for those using Allwrite and either laser or Deskjet printers.

This is the first article, and is intended as a general introduction. The next article will get down to specifics for driving a laser printer with Allwrite on the Model 4. After that Gary will devote an entire article to the Deskjet family of printers. We hope that, after these initial articles, readers who are finding them useful will get in touch with either Gary (for the Deskjet, me (for the laser family, or CN80 (general comments) - so that the editor of CN80 will know whether there is reader interest in a monthly column.

We also plan to make available to CN80 readers at least two sets of software (one for the laser family, one for the Deskjet family) which will enable Allwrite to drive any of these printers smoothly and efficiently. To use this software, indeed to make much use of any of the information to be offered columns, MUST be a LICENSED owner of Allwrite (Version 1.12 or 1.13 for the Model 4.

WHY ALLWRITE?

Anyone familiar with recent developments in the MSDOS world knows that the popular word processors touted as all the rage (WordPerfect, MS-WORD, WordStar, etc.) are WYSIWYG ("What you see. Is what you get") formatters; they try to duplicate the exact page and print characteristics on the screen, so that the user can see the results before printing. In the TRSDOS world, LeScript is an example of WYSIWYG formatting, and so is SuperScriptsit. Both of these formatters work just fine with

standard printers (dot matrix, daisywheel, etc.). Most of these printers use fixed width font, where each character occupies the same horizontal space. proportional width fonts, which require the formatter to know the individual width of each character available, were primarily used by daisywheel machines.

The laser printer made life enormously complicated for the WYSIWYG world. It is at its best with proportional fonts, and promised fonts of many varieties (shadows, hollow, emboldened) and sizes, so that document preparation moved from printing to formatting in "camera-ready form." But the standard microcomputer screen could not handle different fonts and font characteristics until graphics screens were developed (CGA and VGA are the current MSDOS standards). even when these were developed however, software which managed them required vast amounts of memory and moved at a snail's pace. With the advent of 32-bit systems (such as those based on the 80386 chip), these problems have been reduced; but the fact is that WYSIWYG formatting on even the fastest microcomputer today exacts a heavy toll on the CPU (and on the user.)

The primitive screen management and 64 architecture of the Model 4 mean that it will never do even a tolerable job of WYSIWYG presentation. The fact is, however, that many MSDOS users and sites have recently been questioning the WYSIWYG Gospel. Word processors on large mainframe systems have not traditionally been WYSIWYG, partly because of the large variety of terminals which are connected to them. One of the oldest formatters in the computer world, TROFF, produced by AT&T as part of the UNIX Library of utilities and still widely used on giant UNIX systems, is not WYSIWYG. In 1988, and with much fanfare, TROFF was ported to the MSDOS environment, where it is currently supported by Elan Software in California, and has enjoyed considerable success.

What is amusing about all of this is that TROFF was the original model for the Allwrite formatter on the Model 4. The basic idea in the TROFF family of formatters is just this. Text is prepared without any attempt to duplicate on the screen its final appearance. In fact, TROFF doesn't even provide an editor to write your

text (you can use any editor on any computer, since the text is in plain ASCII). Commands for final formatting of the document are included in the text using a special control character (in TROFF this is a dot in the first column of a line, and in Allwrite it defaults to a semicolon). When the text is ready, the formatter is loaded, and formats the document while sending it to the printer. This feature of bypassing the screen in document formatting usual produces enormous savings of time: no less enormous on the Model 4 under Allwrite than on a large UNIX mainframe under Eoff. On the Model 4 it is particularly beneficial, since it eliminates the 64k barrier; the source file is on disk, and the formatter output is sent to the printer but not stored in memory, so there is no real limit to the size of a document.

The moral of all this is plain and simple. If you have a Model 4 and are using Allwrite for document preparation, you are in a good position to take full advantage of modern technologies such as laser printing.

Despite all of the commercial hype about WYSIWYG word processing, many users out there have turned their backs on the hype and on WYSIWYG in favor of formatting in the style of Allwrite or TROFF. We have several MSDOS machines in our departmental User Area, as well as a dozen Model 4 systems. The MSDOS systems are equipped with all the modern stuff (WordPerfect, WordStar, MS-Word). The simple fact is that, for text formatting, Allwrite beats them all hands down in speed and ease of use. NOT in graphics. If you are trying to incorporate pictures and drawings into your text, Allwrite is not for you.

HOW LASERS PRINT TEXT

David Goben has been providing CN80 readers with regular information on the inner mysteries of the laser engine, and its PCL language. Laser printers in fact have two modes. In GRAPHICS MODE, the user (through software) controls the position of every dot (there are 300 dots to an inch), and the laser operates much like a plotter. Memory requirements here (for printer and computer) are extensive. In TEXT mode, the printer uses FONTS of various kinds. Each font is a collection of letters, and each letter stored in the printer memory is described in terms of the dots which make

it up, but the letters can be addressed as wholes (you tell the printer to print an "A": it has the map of several hundred dots (called a RASTER) which make the letter). Text mode is what formatters like Allwrite use. That explains why they are fast and efficient, and also why they are not so good at handling graphics.

Laser printers typically come with several fonts built into their hardware, and these can be addressed directly if you know the right magic incantations (sometimes called "escape codes"). Usually there are only a few standard fonts such as Courier. Since different users have different printing needs, the laser printer provides for addressing additional fonts of the users' choice. These fonts can be either into CARTRIDGES (thus hardware) or sent to the printer from the computer (software). The sending of fonts in this way is called DOWNLOADING, and downloadable fonts are usually called SOFT FONTS.

One advantage of soft fonts is that, since you have access to them in the computer before downloading, you can analyze them and find out how they are built. This includes finding out the individual widths for each character if the fonts are proportional, since without this information the formatter won't have to know anything about line lengths. Of course downloading a font takes time, and so cartridge fonts are faster. Their disadvantage is that, since they are hardware, using them with Allwrite (or any other formatter) requires that either the vendor provides you with the necessary printer drivers or with a lists of font widths and characteristics. No cartridge vendor supports Allwrite with a custom driver. If you purchase a cartridge you must be able to get from the manufacturer both the width list and the escape codes for each font which it contains, so that you can pass that information on to Allwrite. If you purchase a Hewlett-Packard cartridge there is no problem, H-P technical services will supply you with a printed table of widths, and the escape codes are part of the documentation. Indeed, I've had several occasions to phone Hewlett-Packard Technical Assistance over the past years, and they have helped enormously. Other vendors may not be so accommodating, so you should investigate before buying any other cartridge. One manufacturer to avoid

is Pacific. Technical assistance from them is almost non-existent, and what information we could get was often inaccurate anyway.

My advice for Allwrite users with a laser printer is to make soft fonts your primary printing means. They are cheaper than cartridges, they don't wear out (since disks can be backed up, as cartridges cannot), and there are thousands of them available. Many are available in the public domain also, and we hope to make some of them available to CN80 readers through CN80 shortly.

A LASER IS NOT A LASER

Not all laser printers are created equal. If you are shopping for a laser printer, price is only one factor. Hewlett-Packard currently controls about 80% of laser sales worldwide, and they have been very aggressive (in pricing, documentation, support, etc.) in defending their market share. There are also plenty of clones from which to choose. Most advertise that they are "compatible" with the HP. One advantage to many of these clones is that, in addition to HP emulation they often offer built-in emulation for other printers such as Epson or Pro-Writer, which means that you can use them with software which provides drivers for these but NOT for the HP. There is a great deal of such software in the Model 4 world, especially Epson drivers; so the clones may be particularly attractive. Be aware, however, that using a laser or Deskjet with an Epson emulation does not take advantage of anything but a small fraction of its capabilities.

Beware of compatibility claims also, since sometimes they mean little. I have worked with four different (not manufactured by Hewlett-Packard) clones in the past couple years, and some are not fully compatible. For most manufacturers compatibility refers to the HP-Plus or HP-2 printers, and not the newer HP-3 (which offers scalable fonts and some other features).

Finally, do your own price comparisons, and don't be misled by "initial costs" savings. The initial cash you lay out for a laser printer is only one piece of the puzzle. Toner and printer cartridges must be replaced at intervals ranging from 5000 to 15,000 pages, platens have to be replaced, and sooner or later your printer will need

servicing. A recent article in PC-World magazine in fact suggested that the Deskjet Printer (at a retail of about \$700) actually cost more than a \$1600 Laserjet-2. This estimate was based on frequency of repair, plus per-page costs of printing (which was \$0.0415 for the Deskjet and \$0.031 for the Laserjet) over the expected lives of the printer engines. The Laserjet cartridge will cost you about \$90, the Deskjet one tenth of that but the Laserjet cartridge outlasts a Deskjet cartridge by an order of about 30 to 1.

Price is not the only consideration anyway. The Deskjet used to be considered a "poor man's laser," and thus should have disappeared when the cheaper HP-P appeared. It did not, and is one of Hewlett-Packard's best selling these days. It offers some unique and interesting features of its own. Gary will say more about those later. Software developers are just beginning to take advantage of the Deskjet's potential, rather than treating it as a small laser printer.

Neither Gary nor I will advise you on which laser to purchase, or whether to purchase a Deskjet instead. Shop around, and look at features. If you are looking at laser printers, make sure that the printer you price has at least 1.5 meg of memory. Some of the older ones have only a half-meg (512K), but that's not enough to store even a small number of soft fonts of several sizes. Check the service and support (is it local, or must you ship your machine to have it serviced?). If the vendor is willing to give you the names and addresses of some earlier purchasers, you can also contact them to get some idea of frequency of repair and how happy they have been. Lastly, see if you can find out what "HP compatible" means.

Next time we will be looking, in rough outline, at the basic procedures you need to use to get Allwrite and your laser or Deskjet printer talking on the same track.

Readers may reach Lee Rice by writing to him at: Dept. of Philosophy, Marquette University, Milwaukee, WI 53233. Email can be sent via BITNET to 6802RICEL@MUCSD. Gary Shanafelt can be contacted at: Dept. of History, McMurry College, Abilene, TX 79697.

WORLD1/BAS - WORLD LISTING NUMBER ONE By David P. Miller

```

1 REM Load an /HR file to the screen using OUT pp,nn statements.
2 REM Does NOT require Graphics Basic.
3 REM Written by David P. Miller for Computer News 80 Magazine, 1990
4 CLS:SYSTEM "DIR /HR (A=N)": ' Display /HR files available
5 INPUT "Which file do you want to load (Don't type /HR) ",FL$
6 REM Check to see if file name is ok
7 ON ERROR GOTO 40:OPEN "I",1,FL$+"/HR":CLOSE 1:GOTO 50
8 PRINT "INVALID FILE NAME! Try again.":GOTO 20
9 ON ERROR GOTO 0:OPEN "R",1,FL$+"/HR",1:FIELD 1,1 AS BT$
10 CLS:OUT 131,(1+2+128): ' Graphics, R/S waits, Inc X after writes
11 FOR Y=0 TO 239:OUT 128,0:out 129,Y: ' Set X/Y, Vertical loop
12 FOR X=0 TO 79:GET 1:OUT 130,ASC(BT$): ' Get a byte, display it
13 NEXT X: ' Finishes a line of dots across the screen
14 NEXT Y:CLOSE 1: ' Next vertical dot row, close file
15 INPUT T$:OUT 131,0: ' Wait for key, Normal screen

```

PATCH631/JCL by Art McAninch
Adapted from PATCH63/JCL by Jim Gaffney

```
. This file is a collection of some of the most popular and useful patches
. which Jim Gaffney had previously assembled into PATCH63/JCL along with the
. addition of several patches adapted from previous ones by David Goblen.
. They have been updated to utilize the correct addresses for LS-DOS 6.3.1.
. Installation of the patches is menu driven, and you can select which (if any)
. of the patches that you desire. A backup of your original 6.3.1 Master Disk
. should be used as the target disk in drive 0 when installing these patches
. to preclude an abort of the JCL file caused by a FIND mismatch. If you use
. Steven Milliken's SHELL19 as an ECI, you should install it as SYS13/SYS
. before executing this file because this file contains patches to modify
. SHELL to operate under DOS 6.3.1 or subsequent and to use the "KILL" com-
. mand should you opt to change "REMOVE" to "KILL". You may install some
. patches now and run the file at a later date to install others. Do NOT,
. however, attempt to install the SAME patch twice or a FIND error will occur.
```

```
//alert 3,1,3,1,3,1
//pause PRESS <ENTER> TO CONTINUE, <BREAK> TO ABORT INSTALLATION.
cls
```

- Patches Number One - LS-DOS needed room for the "ID" command, so the optional KILL command was removed. This patch replaces the REMOVE command with a KILL command. If applied, REMOVE will no longer function and problems may be encountered when an application specifically invokes the REMOVE command. Such is the case with Steven Milliken's SHELL19. However, Steve was gracious enough to provide a patch so that SHELL19 will work with the KILL command replacing the REMOVE command (which follows this patch.)

```
//alert 3,1,3,1,3,1
//keyin PATCH SYS1/SYS to Replace "REMOVE" with "KILL"? (1=YES,2=NO)
//1
PATCH SYS1/SYS.SYSTEM6 (D02,15=4B 49 4C 4C 20 20:F02,15=52 45 4D 4F 56 45)
///
```

.
• *IF* you installed the KILL command *AND* you have installed SHELL19 as an
• ECI in SYS13/SYS, you should now patch SYS13/SYS to use the KILL command

//alert 3,1,3,1,3,1
//keyin PATCH SYS13/SYS (SHELL 19) for LS-DOS 6.3? (1=YES,2=NO)
//1
PATCH SYS13/SYS.SYSTEM6 (X'9FE9'=30)
///

.
//alert 3,1,3,1,3,1
//keyin PATCH SYS13/SYS (SHELL 19) to use the KILL COMMAND? (1=YES,2=NO)
//1
PATCH SYS13/SYS.SYSTEM6 (D2E,DA=4B 49 4C 4C 20 20:F2E,DA=52 45 4D 4F 56 45)
///

.
• Patch Number Two - This patch makes "SIDES=2" the default for FORMAT/CMD.
• It is especially helpful for use on the Model 4D. You may still specify
• "SIDES=1" in the parameter line to format a SSDD disk.

//alert 3,1,3,1,3,1
//keyin PATCH FORMAT/CMD to make DSDD the DEFAULT? (1=YES,2=NO)
//1
PATCH FORMAT/CMD.UTILITY (D09,57=02:F09,57=00)
///

.
• Patches Number Three - This set of patches will enable drives 2 and 3 to be
• enabled upon bootup. This may also be accomplished by use of the SYSTEM
• and SYSGEN commands; however, using this patch will negate the requirement
• to have a CONFIG/SYS file present to enable these drives.
• *NOTE* - After this patch is installed, the system MUST be rebooted before
• the newly enabled drive(s) can be accessed.

//alert 3,1,3,1,3,1
//keyin ENABLE DRIVE 2 at BOOTUP? (1=YES,2=NO)
//1
PATCH BOOT/SYS.SYSTEM6 (D02,84=C3:F02,84=C9)
///

//alert 3,1,3,1,3,1
//keyin ENABLE DRIVE 3 at BOOTUP? (1=YES,2=NO)
//1
PATCH BOOT/SYS.SYSTEM6 (D02,8E=C3:F02,8E=C9)
///

.
• Patch Number Four - This patch will cause (B=Y) to be the default for the
• DEVICE command, i.e., all the logical devices will be displayed as the
• default rather than only the disk drives.

//alert 3,1,3,1,3,1
//keyin PATCH DEVICE to make (B=Y) the Default? (1=YES,2=NO)
//1
PATCH SYS6/SYS.SYSTEM6 (D20,67=FF FF:F20,67=00 00)
///


```

.
.
. Patch Number Five - This patch disables most of the PASSWORD checking.
.
//alert 3,1,3,1,3,1
//keyin DISABLE PASSWORD CHECKING? (1=YES,2=NO)
//1
PATCH SYS2/SYS.SYSTEM6 (D02,50=18:F02,50=28)
///
.
.
. Patch Number Six - This will disable Master Password Checking by BACKUP
.
//alert 3,1,3,1,3,1
//keyin DISABLE MASTER PASSWORD CHECKING by BACKUP? (1=YES,2=NO)
//1
PATCH BACKUP/CMD.SYSTEM6 (D06,DA=00 00 00:F06,DA=CD 11 31)
///
.
.
. Patch Number Seven - If, in using FORMAT, you specify the (ABS) parameter,
. this patch will disable the DOS check to see if the disk is formatted.
. If you REALLY want (ABS), this will save formatting time. It is always best
. to bulk erase a disk before reformatting it, anyhow.
.
//alert 3,1,3,1,3,1
//keyin DISABLE FORMATTING CHECK on (ABS) PARAMETER? (1=YES,2=NO)
//1
PATCH FORMAT/CMD.UTILITY (X'3496'=CD 1A 3A)
PATCH FORMAT/CMD.UTILITY (X'3A1A'=3A 2B 35 B7 C0 CD 31 2A C9)
///
.
.
. Patch Number Eight - Reduces the time necessary to format a MEMDISK by
. removing most of the memory verification in the MEMDISK/DCT.
.
//alert 3,1,3,1,3,1
//keyin DISABLE MEMORY VERIFICATION for MEMDISK? (1=YES,2=NO)
//1
PATCH MEMDISK/DCT.UTILITY (D06,76=00 00 00:F06,76=CD 59 36)
PATCH MEMDISK/DCT.UTILITY (D06,80=00 00 00:F06,80=CD 59 36)
PATCH MEMDISK/DCT.UTILITY (D06,85=00 00 00:F06,85=CD 59 36)
///
.
.
. Patch Number Nine - Allows the use of lowercase letters in the diskette
. name when formatting. NOTE -- lowercase letter in the diskette name
. can be entered in the parameter line only {i.e. (NAME="Lower")}. If
. they are entered in response to a system query, they will still be
. converted to uppercase by the system.
.
//alert 3,1,3,1,3,1
//keyin ALLOW lowercase LETTERS in DISKETTE NAME? (1=YES,2=NO)
//1
PATCH FORMAT/CMD.UTILITY (D09,DD=00 00:F09,DD=EE 20)
PATCH FORMAT/CMD.UTILITY (D0D,AC=7B:F0D,AC=5B)
///
.

```

. Patch Number Ten - Allows a more liberal DATE entry on boot-up. Normally,
 . to enter January 1, 1991, you would enter 01/01/91. With this patch in
 . place, you only need enter 1/1/91.
 . (Adapted from David Goblen's DATE63/FIX)

//alert 3,1,3,1,3,1

//keyin ALLOW more liberal DATE entry on BOOT-UP? (1=YES,2=NO)

//1

PATCH SYS0/SYS.SYSTEM6 (D0F,A5=57 CD AC 21 38:F0F,A5=5F CD 35 21 30)

PATCH SYS0/SYS.SYSTEM6 (D0F,AA=02 AF 53 82 37:F0F,AA=04 83 5F 37 7B)

PATCH SYS0/SYS.SYSTEM6 (D10,46=7E D6 30 FE:F10,46=00 00 00 00)

PATCH SYS0/SYS.SYSTEM6 (D10,4A=0A D0 23 C9:F10,4A=00 00 00 00)

///

. Patch Number Eleven - Allows a more liberal DATE entry from DOS Ready.
 . Normally, to enter January 1, 1991, you would enter 01/01/91. With this
 . patch in place, you only need enter 1/1/91.
 . (Adapted from David Goblen's DATE63/FIX)

//alert 3,1,3,1,3,1

//keyin ALLOW more liberal DATE entry from DOS Ready? (1=YES,2=NO)

//1

PATCH SYS7/SYS.SYSTEM6 (D05,7F=C7 04:F05,7F=00 27)

PATCH SYS7/SYS.SYSTEM6 (D06,A6=57:F06,A6=5F)

PATCH SYS7/SYS.SYSTEM6 (D06,A8=00 27 00 00 82:F06,A8=F1 25 30 04 83)

PATCH SYS7/SYS.SYSTEM6 (D06,CC=CD F1 25 D8:F06,CC=53 75 6E 4D)

PATCH SYS7/SYS.SYSTEM6 (D06,D0=AF 53 2B C9:F06,D0=6F 6E 54 75)

///

. Patch Number Twelve - Modifies DEBUG to display 128 bytes instead
 . of only 64.
 . (ref David Goblen, COMPUTER NEWS 80, Vol 2 No.9, pp.5-6)

//alert 3,1,3,1,3,1

//keyin Modify DEBUG to display 128 bytes vs 64 bytes? (1=YES,2=NO)

//1

PATCH SYS5/SYS.SYSTEM6 (D00,7A=14:F00,7A=10)

PATCH SYS5/SYS.SYSTEM6 (D00,D7=80:F00,D7=40)

PATCH SYS5/SYS.SYSTEM6 (D00,EF=80:F00,EF=C0)

PATCH SYS5/SYS.SYSTEM6 (D01,60=08:F01,60=04)

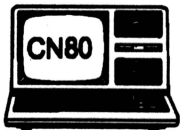
///

. cls

//ALERT 2,1,6,0,6,0,4,1,6,3,3,2,2,2

. That's the last one! Enjoy your customized LS-DOS 6.3.1 !!
 . Art McAninch, ICTHUS Computer Services

//EXIT



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--------------------	-------------

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----------	---

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----------	----------------------------------

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----------	--

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MD4HRZ19	High Resolution Presentation System Program by David P. Miller for Model 4
----------	--

Volume Disk Number	Description
--------------------	-------------

NEW ADDITIONS TO THE MODEL 1/3 CATALOG

MD3EDU38	CLAN Genealogical Data Base by Arthur C. Hurlburt. Works on model 3 or 4 in the 3 mode.
----------	---

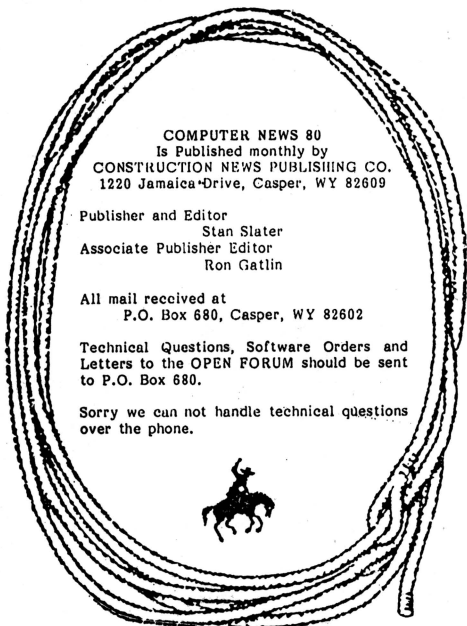
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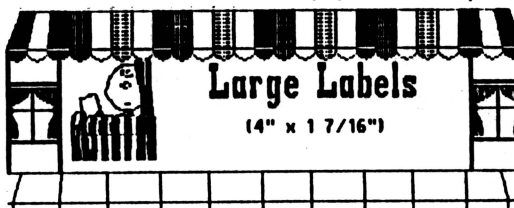
Printer not listed? If it does not emulate any of the above but your manual says it will print 'double-density' graphics (120-dpi) write to me at the correspondence address shown below. The first person writing about a previously unsupported printer can obtain a \$5.00 credit toward purchase.

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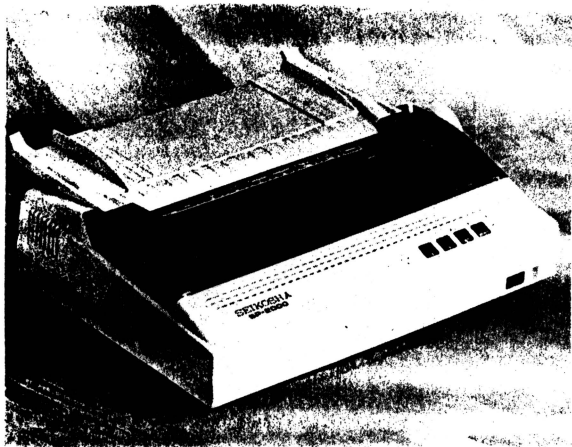
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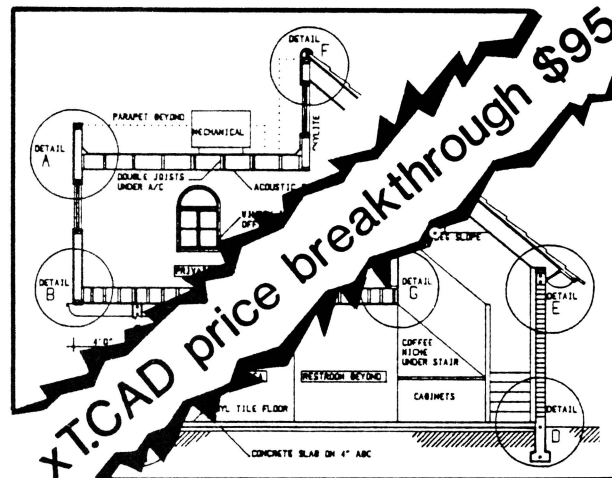
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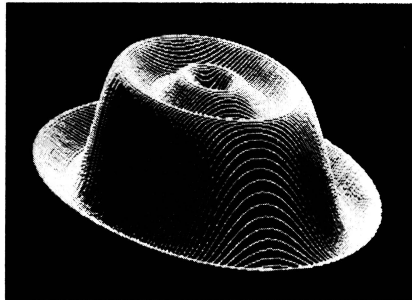
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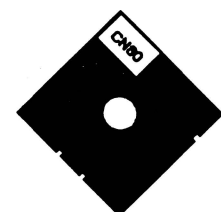
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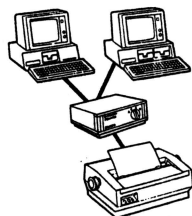
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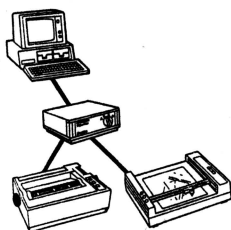
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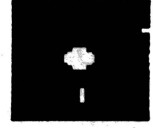
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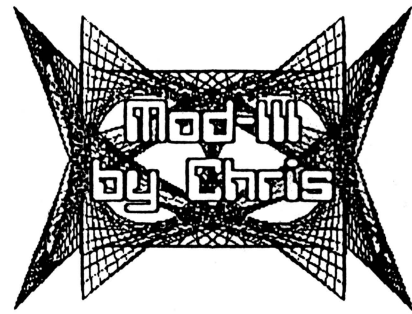
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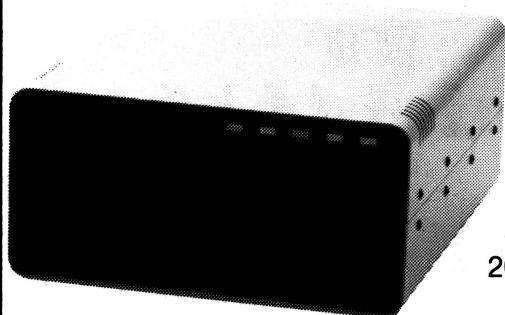
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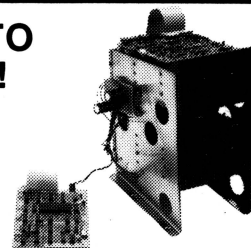
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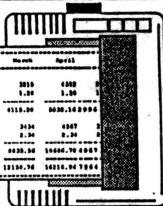
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EDITORIAL COMMENT

One glance at the index and you will see a most extraordinary system. How do you get all these great articles contributed from the most loyal of us, the readers and hold the information for another system?

Simply we know that you want and need the information and when in writing it is you reader really to write, we do the best and put it in it. - The paper words of information that represent a lot of effort and that have of different ways of the part of the system. We have found ourselves a great deal of information, we couldn't have done it with our help.

We are sorry that the other system had to spend its time, but believe in the Case Files will be in the best way to work.

And even if some of our readers don't have yet to begin the best way after that, when we have and other system shows the way, it will be a great step in the research system that starts with the first research, much of the system and the system about to show long months of work that are just around the corner again.

After reading all these great articles, we only thing we hope could have for some time - just a word, we hope - and it.



